The Mining Journal

LONDON, JANUARY 31, 1958

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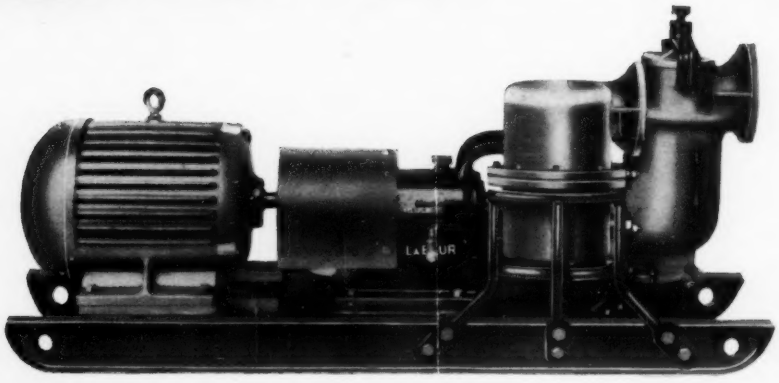

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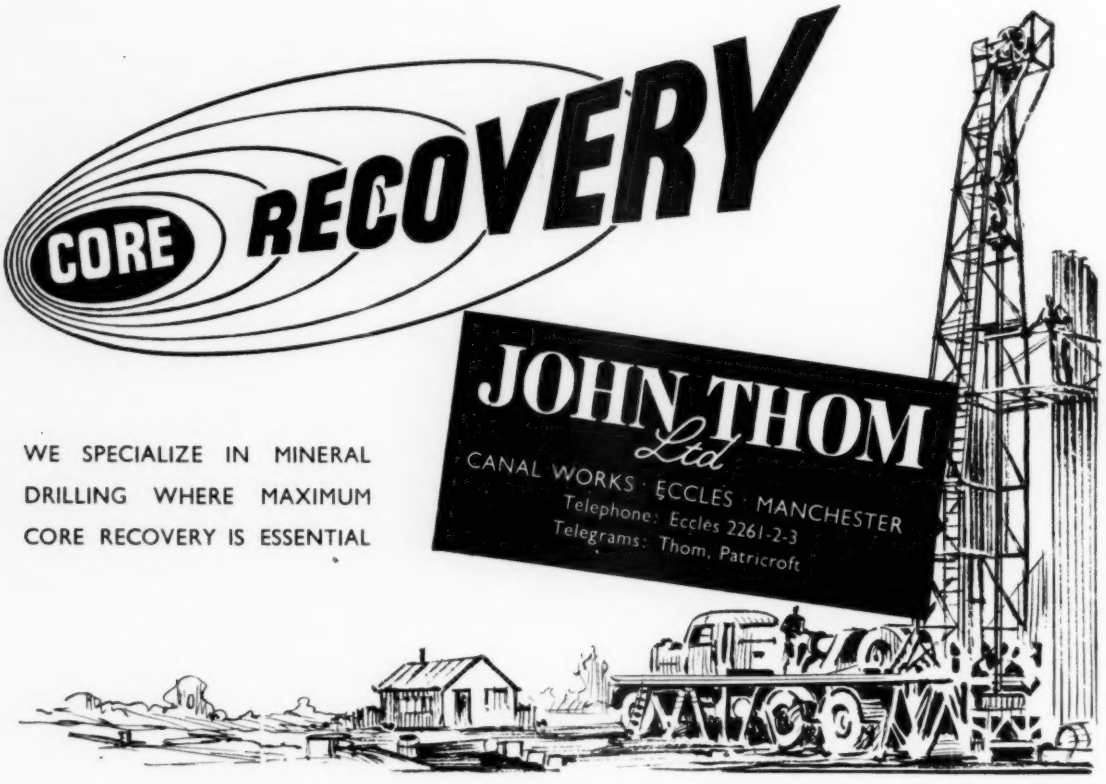

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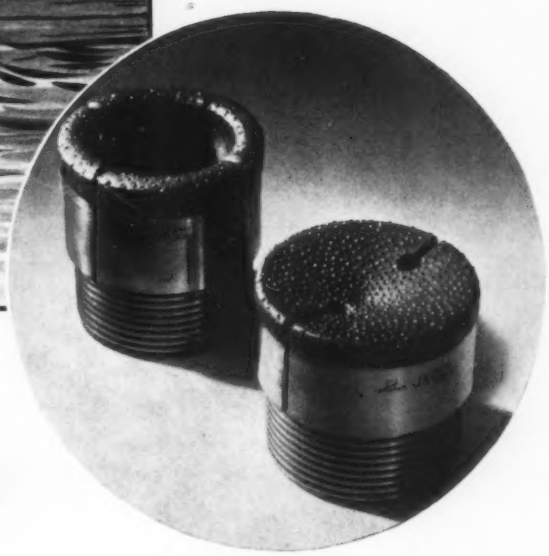

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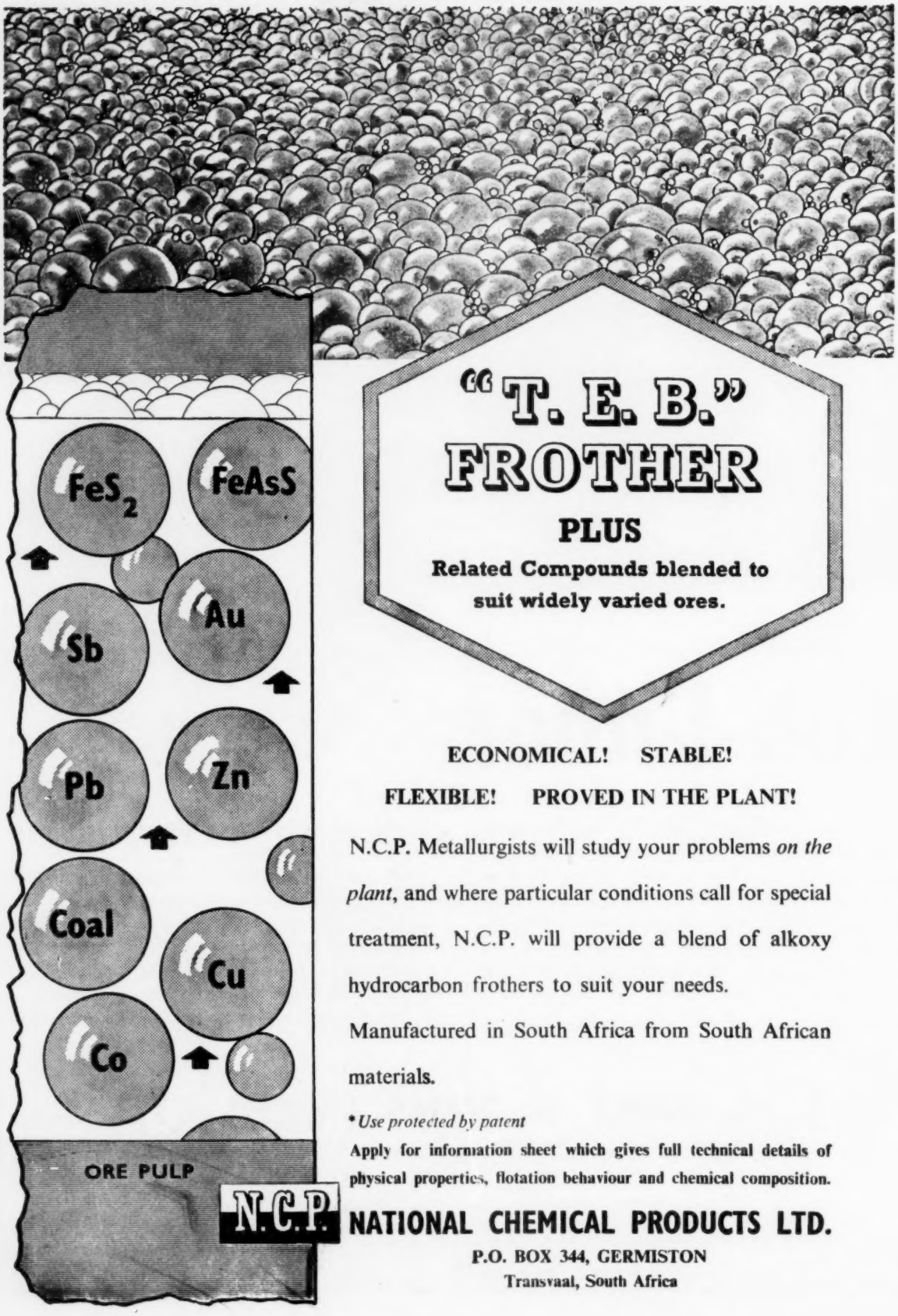

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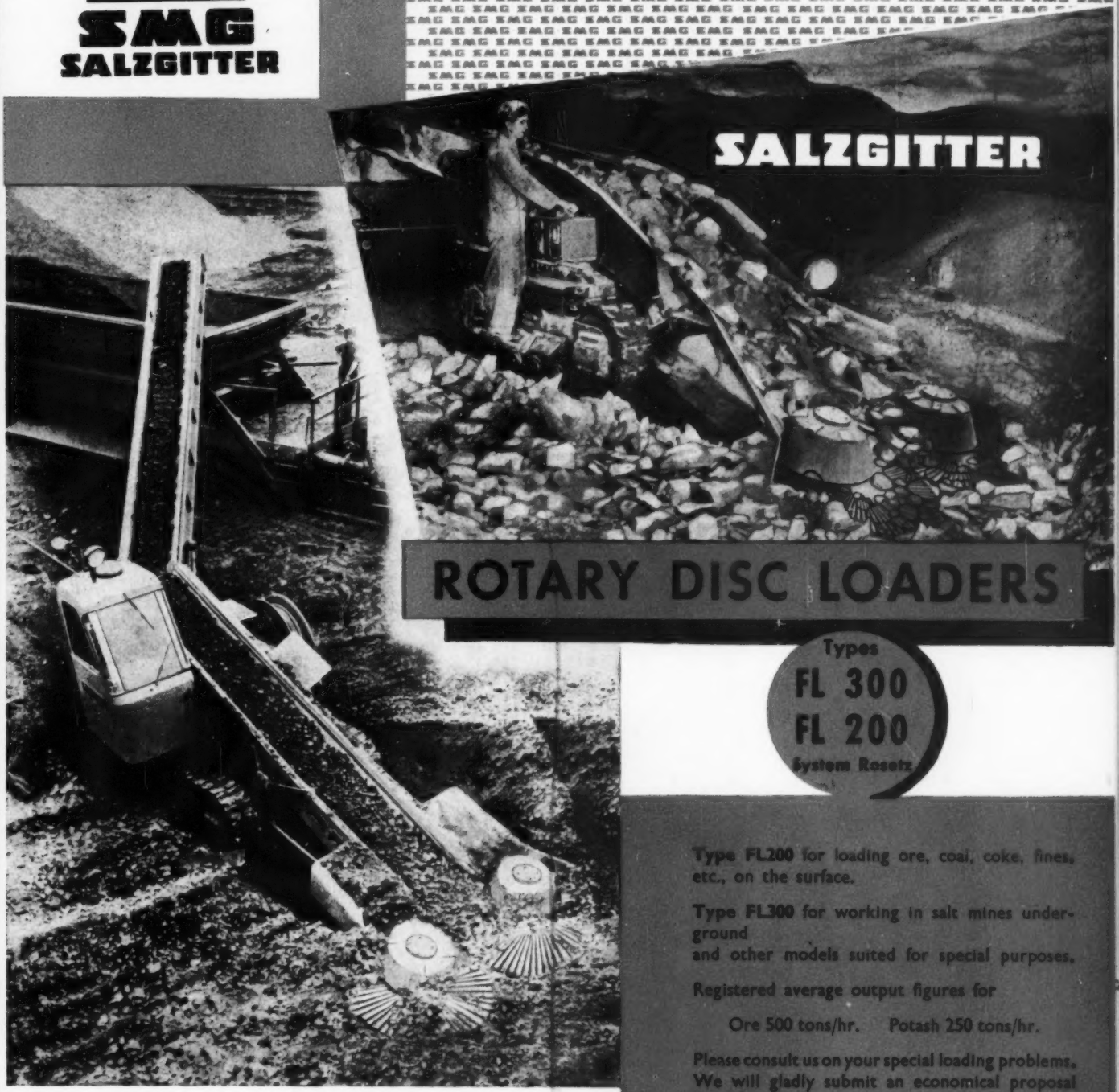

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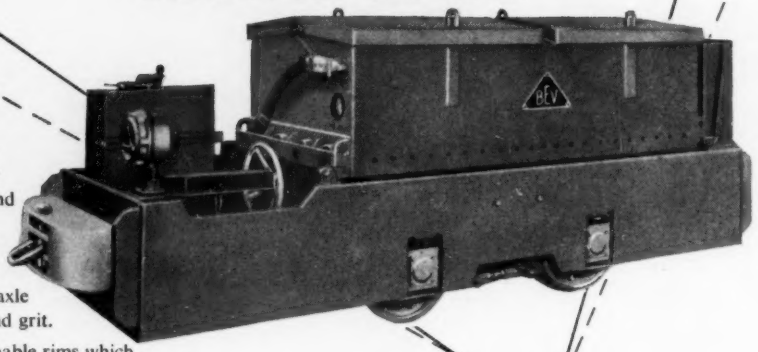

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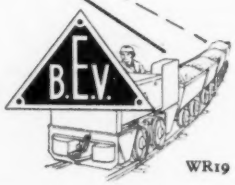

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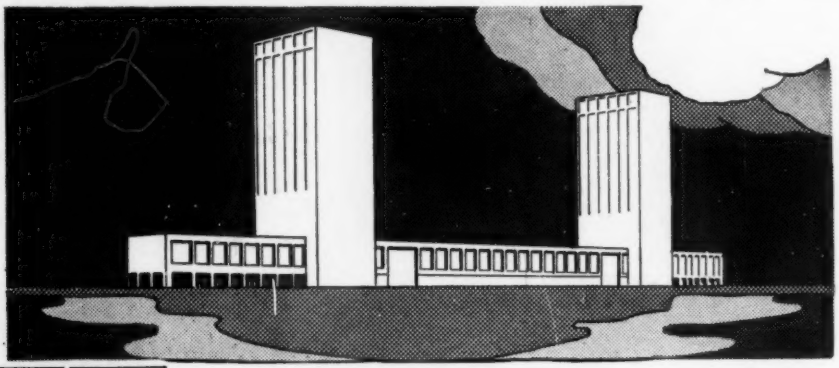

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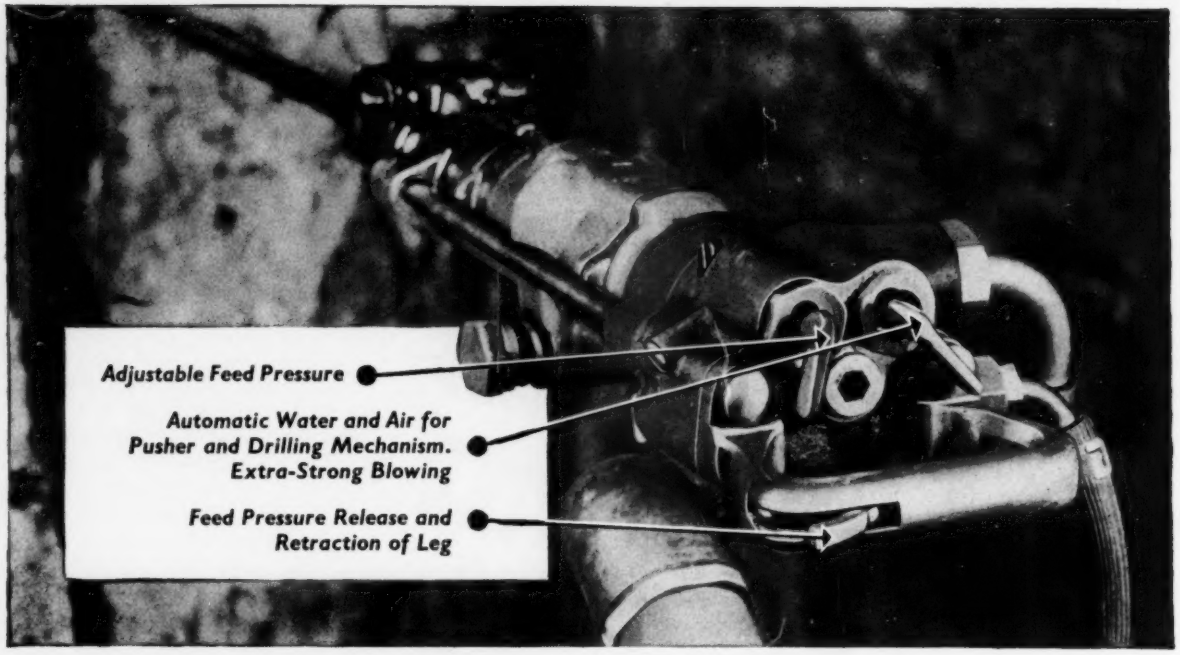
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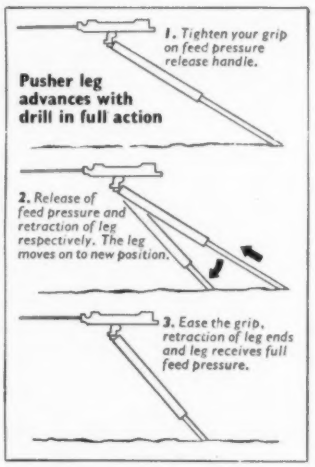
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The Mining Journal

London, January 31, 1958

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Tin Agreement Under Strain

THE communiqué issued after last week's meeting of the International Tin Council in London makes it clear that the cash resources of the buffer stock were then very much nearer to exhaustion than most people realized. It is now disclosed that the third contribution to the buffer stock was called up on December 30, which indicates that by that date the buffer stock manager was holding at least 15,000 tons of metal. How much he has taken up since then is uncertain but market opinion is inclined to put it at about 5,000 tons. Moreover, as the original cash call-up, which was theoretically intended to purchase 15,000 tons of tin, probably did not purchase more than 13,000 tons owing to the first cash contribution being assessed at £640 per ton, it seems probable that, by the time the Council met, the buffer stock manager was within 3,000 or 4,000 tons of his cash limit.

In the face of this situation the Council has taken commendably resolute action. In the first place it has unanimously agreed to recommend to member governments the creation of a special fund to be put at the disposal of the buffer stock manager. An understandable secrecy is being maintained regarding the size and nature of this additional contribution, but it is reasonable to suppose that at any rate part of the money is being made available immediately.

As this additional contribution does not come within the obligations imposed on member-countries under the Tin Agreement, this contribution is presumably a voluntary one, and may, in practice, prove to be in the nature of a loan. Indeed, it may be that the Council itself does not yet know the full extent of the additional funds to be made available, but the fact that the decision has been taken at all indicates the determination of the Council members to support the market at any cost, until the quota cuts restore a balance.

For practical purposes it must, therefore, be assumed that, at any rate in the short term, the buffer stock manager has a blank cheque, and it is, therefore, a little difficult to understand the hesitancy which still characterized the tin market at the beginning of this week.

Short of a major economic slump the effect of production cuts must soon begin to make themselves felt on the market, even allowing for the excess production which was pushed through customs immediately prior to quotas coming into force. Moreover, the current political situation in Indonesia has resulted in the cessation of shipments to the Arnhem smelter since the end of November and as yet there is no news of concentrates being diverted to some other destination.

Beyond this, the Council's new quota decisions (described in the next paragraph) may well encourage individual producers to delay further shipments to smelters until the expected price rise eventuates. Mines have until the end of March to deliver their first quota production to customs, and those who have the cash resources to wait, may well be tempted to do so—a fact which in itself will accelerate the drying up of supplies.

In addition to the financial decisions taken by the Council at its recent meeting, the cutback in quota production has been intensified and extended. The first quota period has been extended from the middle until the end of March without any increase in the quota figure, the effect of this being to reduce the permitted rate of output for the period mid-December to end-March from 71½ per cent to 60 per cent of the annual rate for the twelve months October, 1956, to September, 1957. During the second control period from April 1 to June 30 this rate of 60 per cent is to be maintained, although as the period is half a month shorter the tonnage which may be produced in this period is only 23,000 compared with 27,000 in the first period.

It seems unlikely that production figures for December will have been very much affected by the imposition of quotas, as most mines will have stepped up their shipments sharply in the fortnight prior to December 15; indeed, the Malayan output for December at 5,298 tons (the highest since January, 1957) indicates the probable pattern. For all practical purposes, therefore, it can probably be assumed that the first and second period quota tonnages of 27,000 tons and 23,000 tons may be regarded as being the permitted production during the first six months of 1958.

World consumption (excluding U.S.S.R. and China) during 1957 was probably a little below 155,000 tons. (The actual figures for the first nine months were 117,700 tons but indications are that consumption declined in the last three months.) Against this, world production (excluding Russia and China, but including Russian exports) probably totalled 172,000 tons. There was thus a surplus of 17,000 tons on the year.

The decline in consumption must be expected to continue under present market conditions and at the moment it does not seem unduly pessimistic to anticipate a monthly average consumption of no more than 12,000 tons during the first half of this year, while in the event of a major economic break in the States, the picture could be worse.

To meet this "guesstimated" January-June consumption of 70,000 to 75,000 tons we have a permitted production from the quota countries of 50,000 tons plus perhaps another 10,000 tons representing production from non-quota countries (excluding Russia and China) plus exports from the U.S.S.R. (which in the event turn out to have totalled only some 9,000 tons during the whole of 1957). During this period the buffer stock manager might thus, on balance, have to supply a deficit of 10,000 to 15,000 tons once the price reaches £780. The lower figure seems the more likely as he may sell nothing during the first two months, and it has yet to be seen how much longer U.S. buyers are going to hold off.

Thus, as it now seems probable that the buffer stock will at its peak hold something in excess of 25,000 tons, the buffer stock manager's holding could still be in excess of 15,000 tons by mid-year. Presumably, after their recent experiences, the Council would regard this as too high a metal/cash ratio for comfort, so that, provided the political climate makes this possible, one might expect to see a continuation of quotas at a similar level, at any rate until September.

Distribution of the Tin Quota

	Quota percentage	*Permissible exports 1st period (3½ months)*	*Permissible exports 2nd period (3 months)*	*Average quarterly production in period Oct., 1956-Sept., 1957*
Malaya ...	37.50	10,125	8,625	14,892
Bolivia ...	20.43	5,516	4,699	6,750
Indonesia ...	20.43	5,516	4,699	6,973
Congo ...	8.95	2,416	2,059	3,368
Thailand ...	7.35	1,985	1,690	3,256
Nigeria ...	5.34	1,442	1,228	2,383
Total ...	100.00	27,000	23,000	37,622

The outlook for the individual mine has obviously for the moment deteriorated further, more particularly in the case of those producers with a high capital investment in mechanized equipment. Conversely, those producers likely to suffer least would appear to be those who are high-cost operators and to whom the prospect of an increase in price by £50 a ton is worth more than the additional cutback in production they will now be called upon to make. At the same time it is the mines in this class—which generally have a high labour complement—which are likely to cause the greater amount of unemployment in relation to the extent of their production cuts.

When more information is available regarding individual quotas we shall revert to the outlook for various mines. Meanwhile, we give in the opposite column the revised quota tonnages for the six quota countries for the first and second periods.

DOMINICA'S MINERAL RESOURCES

A factor contributing to the economic development of the Dominican Republic since the war has been the encouragement given to the productive investment of foreign capital.

Efforts are being intensified to promote further exploitation and exploration of mineral deposits, and mining legislation governing the grant of concessions is in force. The exploitation of salt and gypsum deposits in Barahona Province, and of marble and other ornamental stone quarries, was launched under government auspices and has now passed to private ownership by purchase. Marble is now being exported on a large scale to several countries, principally Porto Rico, the U.S., Haiti and Venezuela.

Iron ore is mined at Hatillo, some 40 miles north of Ciudad Trujillo, and transported by road for shipment to the U.S. from Rio Haina. The content of iron is 67.42 per cent. In 1956, 164,000 tons of ore valued at $2,281,000 was extracted. It was expected that last year production would be doubled, due to the installation of new machinery and the discovery of important ore deposits in several areas. Extension of the iron ore mining concessions now operated by Bariam Steel Corporation interests was recently announced. The contract with Compania Dominicana de Minerales, C por A, Barium's Dominican mining subsidiary, extends these concessions, originally awarded in 1955, to 1967. At the same time, the Dominican Republic's development group, Commission de Fomento, has granted the company an exploration permit to explore for iron ore in eight provinces of the country.

The Alcoa Exploration Co. holds a concession, granted in 1945, for the exploration of bauxite deposits in five provinces. Deposits in the concession area are estimated to exceed 60,000 tons with an aluminium content of 45-50 per cent. The company is expected to begin extraction shortly in the province of Barahona. It is likely that further prospecting for this mineral may be undertaken in the near future, and that a processing plant will eventually be established locally.

Canadian interests are prospecting in the interior for deposits of nickel ore, which are believed to exist in substantial quantities.

The Dominican Republic possesses the largest salt deposit in the world. The "Salt Mountain" is located in the province of Barahona, 20 miles from the sea. Until recently it had not been exploited, but the firm of Sal y Yeso Dominicanos, C por A, by means of a railway connecting the mines to Barahona harbour, has been able to export large quantities of unrefined salt. The Barahona mines produce 600,000 tons of rock salt annually.

The construction of a $1,000,000 salt refinery—one of the largest in the American continent—was recently announced. It will satisfy home demands and provide salt for all the Caribbean countries. Exports of salt to New York, at present 50,000 tons annually, were expected to rise to 200,000 tons as a result of the opening of the new refinery. The export of gypsum was expected to increase last year by 300 per cent. Further increases are probable and the supplies of easily-mined rock salt and gypsum are virtually inexhaustible. Deposits of copper ore are known.

The Dominican Republic is the subject of an economic survey published last year by the Board of Trade (*Overseas Economic Survey, Dominican Republic*: H.M.S.O., 2s. 3d. (by post 2s. 5d.)). The survey points out that the country has enjoyed considerable prosperity for some years and its progressive policy in the exploitation of its natural resources makes it a developing market which should not be neglected by British exporters. Moreover, the Republic is a dollar account country and it should not be forgotten that the U.K. is its second best customer.

IRON ORE IN INDIA

In the first six months of 1957, iron ore exports from India totalled 1,170,000 tons worth Rs.60,900,000. In 1956 iron ore exports were 1,982,000 tons worth Rs.102,000,000.

Japan, the largest buyer of Indian iron ore, imported 670,000 tons in the first six months of 1957. A new market for iron ore has been developed in Europe by the contract entered by the Indian State Trading Corporation for the sale of 175,000 tons of ore to Italy. India's iron ore deposits are large enough to make her one of the world's most important producers of iron and steel. They are centred mostly in Singhbhum in Bihar, in the neighbouring district of Orissa, and in Madhya Pradesh, Madras, Andhra and Mysore. These resources are estimated at around 21,000,000,000 tons.

Dr. Tadashi Hida, chief of the construction section of the Japanese Ministry of Transport, Ports and Harbours, and two other members of the Japanese team which is making a survey of iron ore resources in India, have had discussions with several Indian officials. The Japanese mission was told that Mysore State possessed about 500,000,000 tons of iron ores of varying grades of purity, the Sandur ore being by far the most superior.

Mysore State is said to have contracted to export through the Indian State Trading Corporation about 500,000 tons of iron ore during the second Five-Year Plan period.

Steps are being taken by the Government of India to ascertain whether the deposits of iron ore and chromite in Salem district in Madras State are sufficiently large to admit large-scale exploitation.

If these deposits are extensive enough to be exploited on a large-scale, the government would exploit them, said Mr. K. D. Malaviya, Minister of Mines and Oil, Government of India. If not, they would be let out for exploitation by private enterprise.

Orders for the supply of plant and equipment costing about Rs.80,000,000, have been placed with an American firm for the development of iron ore mines in Orissa for the supply of ore to the Rourkela steel plant.

The Government of India is examining a scheme for licensing a 15,000-ton plant for the manufacture of pig iron to be situated at Kevvur in Andhra. From the results of surveys of Andhra's iron ore deposits, it has been found that iron and steel could be manufactured at competitive prices in the State.

MINING STARTS AT TIMNA

Mining of copper ores at Timna, now connected with the new 237 kilometres road Beersheba-Eilat, has started in preparation for the running-in of the copper works which is due to begin in February. During the next few months each section of the works will be separately tested and it is expected that the entire plant will come into operation in March. The running-in process, however, will probably require the whole of 1958. During this period it is hoped to produce 3,000 to 4,000 tons of cement copper and the production will be raised later to a total of 7,000 tons.

The cement copper will be transported from Timna, about 20 kilometres north of Eilat, to Europe to be electrolytically refined. It appears that the cost of refining will work out at some $80 per ton. When copper prices on the international market have recovered sufficiently, the Timna plant may be expanded to four times its size. So far, it is the most ambitious project initiated by Israel Mining Industries. Investment in the enterprise, originally scheduled at I£14,000,000, now exceeds I£20,000,000 (i.e. approximately £4,000,000 sterling).

The crushing plant was designed by the firm Humbold and Klockner and is fully automatic. The crushers are located underground, the conveyors are covered, and the plant is equipped with dust extractors. Its capacity is 2,000 tons of ore per day.

Large-scale production is contemplated by Israel Mining Industries of the heavy liquid Tetrabromoethane S.G. 2.96, now used as a laboratory reagent for the separation of mineral particles according to specific gravity, which has great potentialities in ore dressing. The high concentration of the bromine in the brines at the Dead Sea Works in the Negev, combined with a new method of manufacture, make it possible for Israel Mining Industries to produce tetrabromoethane at low cost on an industrial scale. Concentration studies of various local ores and a survey of possible world markets are being actively pursued.

BRITISH COAL OUTPUT DISAPPOINTS

The National Coal Board can hardly look back on 1957 with much satisfaction. Despite an increase of 7,000 men on the colliery books and continued heavy expenditure on power loading, last year's output was little more than 100,000 tons in excess of 1956. Fortunately for the records, opencast output was up by 1,500,000 tons from 12,080,000 to 13,580,000 tons. Thus the total output for the U.K. in 1957 was 223,640,000 tons as compared with 222,010,000 tons in the previous year.

What was of greater significance was the fact that the figure giving output per man-year dropped by three tons to 295 tons—considerably less than the O.M.Y. in the last year before the war. Then, the tonnage power loaded was less than 1 per cent whereas now the figure is nearing 20 per cent. The quarterly statistical statement issued by the Board covering the third quarter's operations in 1957 shows an estimated deficit for the quarter of £8,140,000. This figure, however, is artificial in that most of the pits take the annual holidays in this period and hence the results for the quarter are always adversely affected.

Of particular concern to the industry is the fact that both the total and serious accident figures showed an increase over 1956—394 fatal and 1,888 serious accidents compared with 324 and 1,736. There were seven explosions in 1957 (responsible for 47 deaths and 67 injuries) which were considered sufficiently serious for the Minister of Power to call for a report.

The European Market For Pyritic Sulphur

By J. GRINDROD

BECAUSE suppliers of sulphur operate in a complex competitive situation, long-range planning becomes exceedingly difficult, and, for this reason, the Cyprus Mines Corporation of Los Angeles, California, a major producer of sulphur from its pyrite ore mines on the Island of Cyprus, recently requested the Stanford Research Institute (SRI) to study present and potential world sulphur reserves and production and to estimate the future demand for pyritic sulphur, with particular emphasis on the European market.

Used as a chemical tool, in either its solid or acid form, by practically every industry throughout the world, it plays an essential part in processing and manufacturing. Representative of the products depending on sulphur are fertilizers, synthetic detergents, pharmaceuticals, lubricants, paints, paper, metals, textiles, films, insecticides, explosives, storage batteries and thousands of others. The two major raw material forms of sulphur are brimstone (elemental) sulphur and the sulphur contained in pyrite ores. Brimstone sulphur in almost pure, uncombined form, is found chiefly in a limited number of sulphur-bearing formations in underground and underwater salt domes along the coasts of the Gulf of Mexico. It is obtained by the Frasch process which melts the sulphur by piping superheated water into the underground formation and forcing it to the surface with compressed air.

Pyrite ores (sulphides of iron or copper), on the other hand, are found all over the world, and contain about 45-50 per cent sulphur, the remainder being chiefly iron or copper. Mining the ore and chemical processing are necessary to separate the sulphur.

Sulphur is also obtained by recovery from natural gas and petroleum, by processing gypsum anhydrite, as a by-product of zinc ore smelting and from desulphurization of coal gas.

Conducted at SRI by an industrial economist group headed by Sherman H. Clark and David Gaber, the sulphur market investigations indicated an increasing use of pyritic sulphur in Europe, despite strong competition from the United States and Mexican producers of brimstone sulphur by the Frasch method.

It was considered that the anticipated increase in European pyrite demand was, in fact, related directly to the elemental or Frasch sulphur reserves in the U.S. and Mexico. Present Frasch sulphur reserves are being depleted by the high and rapidly increasing demands on this method of sulphur production, say SRI. By 1965, a reducing ratio of reserves to production needs is expected since, despite continuous exploration, few deposits of any consequence have been located. At the present time only three new deposits are under development in the U.S., the largest being Freeport's Grand Isle, off the Louisiana coast, which will be the first completely off-shore sulphur mine.

Against this depletion of brimstone reserves, however, must be placed the higher capital costs involved in pyritic sulphur plants and the greater production costs of this type of sulphur.

It is expected that the currently operating sulphuric acid production plants will continue to be the sole Western European market for pyritic sulphur for an indefinite period. The building of new production facilities is considered unlikely because of the 100 per cent greater construction costs compared with plants using Frasch sulphur, this being a major factor in relation to the tight capital situation in Europe.

Affecting the costs of production and the profit margin of different pyritic sulphur plants are many variables, such as plant location, income from the sale of its pyrite sinter by-product (from the sale of the iron content of the ore, chiefly in Western Germany), steam credit, accounting practices, plant age, type of raw material and transportation costs. The savings which might accrue from conversion of plant from pyrite sulphur processing to brimstone sulphur processing are, however, not considered sufficient to warrant a change-over of existing pyrite-using plants.

SRI consider that Western Germany will probably double its pyrite ore imports by 1965, thereby continuing as Western Europe's largest consumer. Spain, Portugal and the Scandinavian countries are also expected to remain as large-scale users of pyritic sulphur.

In the United Kingdom, on the other hand, pyritic sulphur is at great cost disadvantage compared with brimstone sulphur and is expected to be able to maintain its present British consumption rate only through a significant lowering of present prices. To maintain a competitive position in the Netherlands and Belgium, price cuts of lesser magnitude would be necessary.

In France, pyrite demand will probably drop in relation to sulphur recovery from the Lacq natural gas fields.

Western European pyritic sulphur consumption as a whole is expected to increase from a little over 3,000,000 tonnes in 1955 to about 3,725,000 tonnes in 1960 and about 4,500,000 tonnes in 1965. Frasch sulphur consumption in Western Europe is expected to increase from rather less than 1,000,000 tonnes in 1955 to about 1,500,000 tonnes in 1960 and almost 2,000,000 tonnes in 1965, while the consumption of sulphur from other sources is expected to rise from about 1,250,000 tonnes in 1955 to rather more than 1,500,000 tonnes in 1960 and to about 2,250,000 tonnes in 1965. Based on this prediction by the SRI, the total Western European sulphur consumption from all sources in 1965 should be rather more than 8,500,000 tonnes.

The Iron Sands of New Zealand

Great interest is being taken in New Zealand's extensive iron sand deposits, which may become the basis of an iron and steel industry. Previous attempts to utilize them have failed because of the titanium content, but electric furnaces are now available which can deal successfully with high titanium contents. For the following description we are indebted to the *Quarterly Survey* of the Australia and New Zealand Bank Ltd. for January, 1958.

NEW ZEALAND'S more important iron ores differ from those traditionally used as the basis of the world's major iron and steel industries (haematite) and, as such, present peculiar problems which have hindered commercial exploitation to date. The ores extend over almost the entire west coasts of the North and South Islands and also in the north-west area of the South Island.

The reason for concentration along the west coast is thought to be a combination of mountainous terrain, volcanoes, and natural erosion, all acting to carry minerals to the coast, where the lighter materials have been borne away, leaving the heavier minerals to travel slowly along the beaches.

The following important ores may be distinguished :

(a) *Titanomagnetite* — commonly known as Taranaki iron sand — which occurs in beaches and sand dunes, and contains approximately 60 per cent iron and 5 - 7 per cent titanium. Estimated resources of these sands are in excess of 700,000,000 tons, but further exploratory work could significantly alter the estimate.

The iron sands are found along the west coast of the North Island, particularly in the Taranaki district. To date, it seems that the most important resources are in the region of Lake Taharoa-Kawhia. These areas are relatively isolated Maori lands, where geological investigations and utilization of the ores are hampered by transport difficulties.

Taranaki iron sands have three outstanding characteristics, namely, their heaviness, blue-black colour, and strongly magnetic properties.

(b) *Ilmenite* — the black beach sands of Westland are significant for their content of titanium dioxide. Rough estimates of these sands (mainly in the South Island) total nearly 1,000,000,000 tons, with an average content of 27 per cent titanium dioxide and 33 per cent iron. Access to some of the deposits is difficult at the moment, thus hindering evaluation and exploitation.

(c) *Limonite* — containing some 40 per cent iron and a variety of other elements — occurs at Onekaka, in the north-west corner of the South Island. Estimated quantity of ore is only 9,500,000 tons. A considerable reduction on earlier estimates (90,000,000 tons) has resulted from an extensive boring programme. These are the only iron ore deposits of any magnitude in New Zealand that do not contain large quantities of titanium.

Establishing the Industry

Since the war, there has been considerable progress in Scandinavian countries in electric furnace smelting, but large quantities of coal are nevertheless required.

Ample reserves of both sub-bituminous coal and lignite are available; lignite, however, is available only in the South Island. Large quantities of cheap electric power would be necessary and, for this reason also, the South Island, with its large hydro-electric potential, has been suggested as a site if a steel industry were to be established in New Zealand.

The early attempts to establish an iron and steel industry were made with inadequate preliminary investigation and research. Too little was known about the chemical properties of the various ores, which possessed features peculiar to New Zealand. Even more significant was the failure of the early entrepreneurs to examine important economic aspects such as the size and scope of the local market, economies of scale and capital resources required.

Between 1937 and 1949, the government played an active part in attempts to develop a New Zealand steel industry, and plans for a plant with an annual capacity of 104,000 tons of finished steel products at a cost of £NZ4,000,000 were deferred only because of the war. After the war, interest was diverted to Scandinavian research into the question of electric smelting of titaniferous ores, and, in September, 1949, tests with the new process were carried out in New Zealand. The tests revealed that the proposition was, at best, marginal, depending very largely upon the cost of electricity.

It is interesting to note that the earlier approach of endeavouring to remove the "impurities" from the iron as a first step, has given way to attempts to extract them as part of the one process. Thus, research is continuing to examine the possibility of combining the Taranaki iron sands and the ilmenite to produce both iron ore and valuable by-products. By-products would include titanium, vanadium, thorium, nitrogenous fertilizer and town gas.

The capital cost of estabishing an iron and steel industry in New Zealand would be very great and divergent opinions have been expressed as to the likely comparative cost of the finished output.

There are two important questions to be considered. First, is it an economic proposition to establish an iron and steel industry for the small home market, or would export potential need also to be considered? Secondly, to what extent would an iron and steel industry be able to provide the wide variety of shapes and types of steel demanded by manufacturing industry?

Only close and expert investigation and research will reveal whether techniques are now sufficiently advanced to take full advantage of this natural asset and whether the product could be marketed economically.

THE KINGS RIVER

A drilling crew is shown benching down to form the final Haas underground powerhouse chamber from a shelf high up on one wall

THE Kings River Project, the total expenditure of which is estimated at $80,000,000 (£28,500,000) is being carried out high up in the Sierra Nevada Mountains in California. This project will increase the present hydro-electric output by 261,500 kW.

The work on the project is being done in four stages, namely, the Haas underground powerhouse, the Haas tunnel, the Wishon dam, and the Courtright dam.

Future construction includes the installation of two new generating units in the existing Balch powerhouse which will increase its capacity to 126,000 kW., the New Kings River tunnel having a 13-ft. horseshoe section, 18,450 ft. long and the New Kings River powerhouse with a 42,000 kW. capacity. The scope of this article is confined to the Haas underground powerhouse and the Hass tunnel section.

The Courtright dam, now approximately 40 per cent completed, is on the Helms Creek tributary and will be a 1,500,000 cu. yd. concrete-faced rock-filled dam, having a maximum height of 304 ft., is 850 ft. long and at an altitude height of 8,174 ft.

The Underground Powerhouse

The powerhouse is at an altitude of 4,090 ft. above sea level, some 500 ft. below the surface of the ground, and 1,965 ft. back from the Kings River, in a solid granite formation. The decision to build the powerhouse underground was taken for two main reasons : first, an additional 2,000 ft. of penstock would have been required for a surface powerhouse and secondly, the revenue for the life expectancy of the project was increased by using the power developed from the extra 3 ft. of water-head. When completed the powerhouse will have a capacity of 128,000 kW.

Work commenced on November 19, 1956, with a single shift driving the 18-ft. horseshoe tailrace. Approximately 17,000 cu. yd. of rock was excavated and perfect rock formation permitted the tunnel to run unsupported for its full length of 1,963 ft.

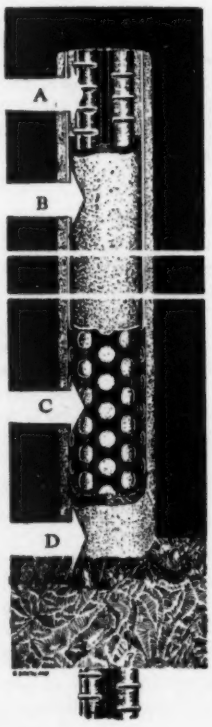
The first step in excavating the powerhouse was the opening of a central floor level chamber, approximately 16 ft. wide, 70 ft. long, and 20 ft. high. This was followed by driving the inverted Y penstock tunnels, a 51 deg. incline manway to the extreme upper end of the arch and two vertical raises to the dome, these operations being carried out simultaneously.

The next step was the opening up of an 8 ft. x 8 ft. drift the full length of the chamber dome, which intercepts the two vertical raises *en route*. The longitudinal drift was enlarged outwards and downwards to a point below the spring line, thus forming the entire chamber crown. Slushers were used to move the mucked material into the vertical raises where it was subsequently removed by Eimco 105 muckers and 6-yd. Koehring Dumptors.

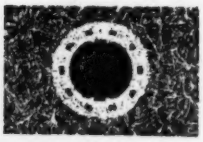
An unusual feature of the construction of the powerhouse was the use of the Swedish Perfo system of roof-bolting, the first time this technique has been used on a major U.S. construction project.

The first step in the Perfo system was the drilling of approximately 1,200 bolt holes of 1½ in. dia. every 10 sq. ft. on 3½-ft. centres, the holes being drilled to a depth of 10 ft., 12 ft. 6 in. or 15 ft. Preformed and perforated cylindrical metal sleeves of 1¼ in. dia. were filled with grout, jointed and then inserted into the bolt holes. Rods of 1 in. dia. were then driven into the mortar, their displacement forcing the material out through the perforations to form a bond the length of the bolt. Wire mesh was then suspended and some 15,000 sq. ft. of roof surface was given a 4 in. layer of gunite. The excavation of the chamber was then carried on by benching down in stages.

The final stage was the completion of the 755-ft. pen-



The Perfo method of bolt cementation. By use of the system the bolt, tube and rock orifice are cemented to a homogenous unit. Sketch shows (A) bolt, (B) inner mortar, (C) Perfo tube and (D) outer mortar



At right is the sequence of major steps followed in excavation. From the top, left, down : driving an 18-ft. horseshoe tailrace 1,963 ft.; second : a central floor-level chamber was opened; third : two vertical raises to the dome, an inclined manway to the arch and the inverted " Y " penstock tunnels were driven simultaneously; fourth, top right : a drift to intercept vertical raises was opened up; fifth : this was enlarged to below spring line; sixth : benching down in stages completed the final chamber form

PROJECT, NEVADA

stock shaft and the 389-ft. vertical access shaft which was pilot-drilled to 6 ft. x 8 ft., then enlarged to 18 ft. dia.

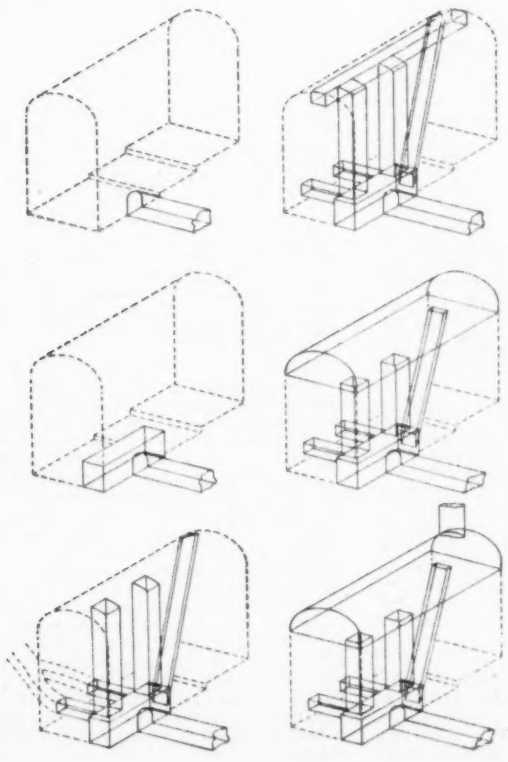
Data on the completed underground powerhouse are chamber 173 ft. long x 56 ft. wide x 85-100 ft. high; a 9-ft. horseshoe penstock shaft 753 ft. long; an 18-ft. tailrace tunnel 1,963 ft. long; and an 18-ft. access shaft 389 ft. deep.

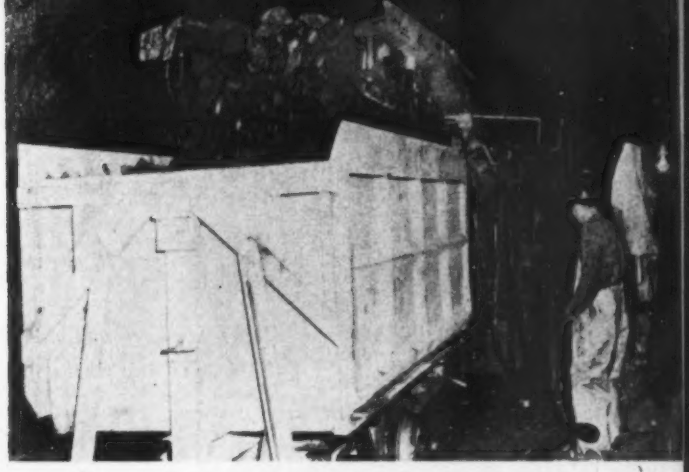
By mid-July, excavation was approximately 85 per cent completed against the contract termination date of September 1, 1957. The amount of rock excavated for the powerhouse chamber has been estimated at 30,000 cu. yd.

Included in the rock drilling equipment were Atlas Copco BBC-22 lightweight air leg drills and Standard Gardner-Denver and Ingersoll-Rand jackhammers, together with Atlas Copco airlegs specially converted for sinking required for benching operations.

The Haas tunnel, which has 13 ft. horseshoe section and is 6.2 miles long, connects the Wishon dam with the Haas penstock and is being driven almost exclusively in solid granite; so far only a few soft spots have been encountered which required timbering.

A 990 ft. access adit tunnel was driven at Sawmill Flats, approximately 3¼ miles downriver from the Wishon dam. This dam will be a 3,690,000 cu. yd. concrete-faced rockfill dam with a maximum height of 270 ft., 3,350 ft. long and built at an altitude of 6,550 ft. Work is now well advanced.





A Conway Type 100 mucker loading car. The Haas tunnel crews completed from three to five drill-blast-muck cycles daily in each heading

Work on driving the main tunnel began on January 12, 1957, and by mid-July each heading had been driven beyond the 7,000 ft. mark. More than one-third of the major excavation work therefore has been completed in the initial six months on a contract not scheduled for completion until November 1, 1958. For the first eleven weeks, tunnel-driving was carried out on an alternate heading basis. Since mid-April last year work has been carried out simultaneously on both headings.

A remarkably consistent footage has been driven by the crews working on a three-shift six-day basis. The record for a single day's work was 142 ft. and the top week (in mid-July) was 834 ft.—the weekly drilling totals have consistently topped 600 ft. As further evidence of the high degree of efficiency with which the "drill-blast-muck" cycle is conducted daily, from seven to nine rounds are fired every 24 hours.

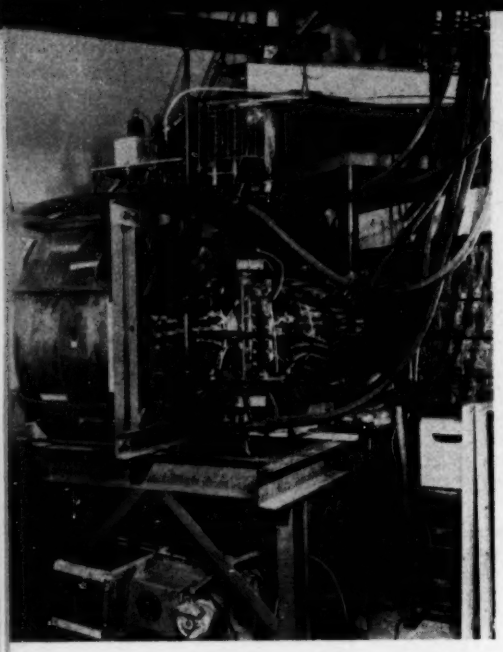
Drilling in each heading has been carried out by six Gardner-Denver drifters, mounted on a job-fabricated two-deck jumbo, the drill steels are equipped with 1⅝ in. Sandvik Coromant detachable bits and with Brunner and Lay bits of the same size. A standard blast pattern with a centre burn and 9 ft. depth was drilled in most cases and approximately 40 cu. yd. of rock were obtained per shot. Conway type 100 muckers with 6 yd. side-dump cars haul the mucked material to a dump area near the adit.

The Crew and Equipment

The composition of a typical heading crew, per shift, is: work crew, (half) walking boss (two headings), one shifter, six miners, six chuck tenders, one nipper, one electrician, one mechanic, one mucking machine operator, three motormen, one swamper, one dump crewman, making 22½ men. On day shift only are one bull gang boss with five helpers. A total of 28½ men per heading.

The basic equipment comprises: two jumbos, two-deck, job-fabricated; 12 Gardner-Denver drifters mounted on Ingersoll-Rand jibs, and four spares, equipped with 1⅝ in. Sandvik Coromant and Brunner and Lay detachable bits; two Conway type 100 muckers, and one Conway type 75 spare; eight Goodman 10-ton locomotives with 36 6-yd. Century steel side-dump cars; three each Ingersoll-Rand air-cooled and Gardner-Denver water-cooled compressors, of 500 to 1,100 c.f.m. capacities; and 23 in. Joy Axi-Vane tandem fans every 3,000 tunnel ft. Yard equipment includes one PD-9 with boom; one Caterpillar D-8 dozer; one 2½-ton flat rack truck; two ½-ton pickup trucks.

MINING MISCELLANY



The Sceptre III discharge chamber

A Yugoslav team of prospectors is reported to have detected a rich deposit of ilmenite near Sumprabum, in the Kachin States, Burma.

★

France is to seek a World Bank loan estimated at 30,000,000,000 frs. (£27,000,000) to help finance the Kouilou power dam project in the Middle Congo.

★

Apayao Consolidated Mining Corporation has been formed in Manila, Philippines, with an authorized capital of 500,000 pesetas to mine, mill, smelt and refine copper.

★

Cuban American Nickel Co., a subsidiary of Freeport Sulphur, has announced plans for a large hydrogen sulphide plant for its ore concentrating facilities at Moa Bay, Cuba.

★

Iron ore production in the European Coal and Steel Community reached a record total of 87,432,000 tons in 1957—an increase of 8.4 per cent. The increase was chiefly due to higher production in French mines, which at 58,530,000 tons gained 9.7 per cent.

★

An Israeli high-level trade mission headed by the Minister of Commerce and Industry, Mr. Sapir, will leave in February for Japan, Burma, Thailand, and probably other Far Eastern countries. Japanese businessmen have recently shown considerable interest in Israel potash, phosphates, copper, salt, etc.

★

Five hundred electric coal drills are to be put into use in the Borsod mines, Central Hungary, this year. It is estimated that the use of drills will step up output by 350 to 400 tonnes a day. Last year, Hungary's 124,000 miners produced 21,000,000 tonnes of coal — 800,000 tonnes above the expected total.

★

The small torus or electrical discharge chamber, Sceptre III, in which the hydrogen fusion reaction has been controlled at the A.E.I. Research Establishment at Aldermaston Court, is a much smaller torus than Zeta, in which the Atomic Energy Research Establishment first controlled hydrogen fusion. The A.E.I. research team have already achieved temperatures of nearly 4,000,000 deg. in this smaller torus. It is interesting to note that Sceptre III is an aluminium toroidal tube made of 12 in. dia. tubing, the mean torus diameter being 45 in., and is threaded by an iron core weighing 4 tons.

★

A modern ore-defreezing plant, intended for defreezing ore loads in railway trucks and using air heated up to 80 deg. C., has been put into operation in Poland. In two tunnels accommodating twenty railway trucks each, from 4,000 to 9,000 tons of ore can be defrozen in twenty-four hours. Constructed from blueprints made by two Warsaw designing offices, the plant has aroused much interest abroad.

★

United Keno Hill Mines intends to increase silver production to offset lower lead and zinc prices. This Yukon territory producer also plans to reopen its cyanide mill to treat flotation tailings. The president, Mr. F. M. Connell, told the annual meeting that development of rich silver ore and increased recovery from the cyanide plant would serve as a stabilizer for the company.

★

Plans have been drawn up and submitted for the construction of an aluminium plant in Angola, an annual output of 50,000 to 60,000 tons being contemplated. No official decision has yet been made by the authorities concerned.

★

A three-man Bechuanaland delegation will fly to London on February 6 to discuss mineral concessions in the Bamangwate reserve with officials of Rhodesia Selection Trust. The delegation will be headed by Seretse Khama, former exiled chief of the Bamangwate tribe. Mr. M. E. Wray, Resident Commissioner of Bechuanaland Protectorate, has announced that "exploratory talks" will take place.

★

Empire Development is closing down its iron ore operations at Port McNeil on Vancouver Island. Inclement weather is given as the reason, but it is stated that the operation may be closed permanently. The company has a $10,000,000 contract to ship 1,380,000 tons of iron ore to Japan over a three-year period. The Japanese have agreed to shipments being deferred pending reopening.

★

Three iron ore deposits comprising about 10,000,000 tons of mineable ore have been discovered in the past two years during surveying at Kolari, North Finland, near the Swedish border. The surveying has hitherto been only of a preliminary nature, and it is possible that the deposits are far larger. The ore percentage is between 30 and 40. The ore can be mined on the surface. The nearest port, Torneaa, is 200 kms. distant by road. There is no railway in the area at present.

★

The world's largest copper-melting electric furnace has gone into operation at the Perth Amboy, New Jersey, plant of American Smelting and Refining. Eighteen ft. in dia. and with a bath capacity of 90 tons of molten metal, it can produce continuously 30 tons of high quality copper per hour. The furnace employs three 18 in. dia. graphite electrodes, each of which when assembled weighs 2 s.tons. It has a transformer rated at 8,000 kVa. with a maximum rated current of 30,400 amps.

★

The Cowchan Copper Co., Vancouver, has reached a copper production of 400 s.tons a month at its British Columbia mine. Its target of 500 s.tons a month is expected to be achieved by mid-February, following the commissioning of an additional ball mill. The company has a three-year sales contract with Japanese firms.

★

The New York head office of the National Lead Co. is reported to be studying a proposed agreement for the lease of Bolivia's nationalized Matilda mine. The draft agreement provides for a six-month period—extendable to one year, if necessary—in which National Lead can study the mine's operating conditions before finalizing the lease agreement. The terms of the lease cover a period of twenty-five years, but also provide for an extension. Payment of royalties is covered. Negotiations between the company and the Bolivian Government have been in progress for two years.

★

The heavy fall in the lead market has had a corresponding effect on the lead bonus paid to all employees on the Broken Hill mines and at Mount Isa, which is based directly on the selling price for the metal, irrespective of the rate of production. The highest bonus ever paid at Broken Hill was in September, 1951, when the rate was £A18 17s. 6d. per week, in addition to wages and contract earnings; the rate for January, 1958, will be £A10 5s. per week. At Mount Isa Mines, Queensland, the bonus will be reduced to £A6 per week, compared to £A17 5s. per week in 1952. The bonus is paid not only to all employees on the mines, but also to office employees at Brisbane. In Broken Hill, the fall in the bonus to the January figure is equivalent to a loss of £A360,000 per year to the community.

★

An agreement for the joint survey of a newly discovered phosphate deposit in the Southern Negev has been signed by a well-known Italian chemical concern and the Israel Ministry of Development. If present expectations are confirmed by the survey, the Italian Government will be prepared to invest half the funds required for commercial exploitation, for which purpose a joint company would be established. Production in the Negev phosphate works is now 21,000 tons per month. It is expected that by next year there will be a regular annual output of 250,000 tons, of which some 150,000 tons will be available for export. Extension of the railway from Beersheba to Dimona, 20 kms. from Timna, which is to be completed in April, should considerably reduce transport costs and so facilitate exports.

PERSONAL

Dr. W. J. Busschau has resigned from the board of Harmony Gold Mining Co., Ltd. Mr. E. S. Hallett has resigned from the board of Blyvooruitzicht Gold Mining Co., Ltd. Mr. L. D. Browne has joined the boards of both companies.

★

Mr. F. L. Wigley has been appointed chairman of Falcon Mines, Ltd., in succession to Mr. E. B. Papenfus, who remains on the board. Mr. G. Abdinor has been appointed a director.

★

Mr. Beville W. Pain has been appointed an assistant manager (London) of the Anglo American Corporation of South Africa, Ltd.

★

Mr. W. M. Walker has been appointed a director of Western Reefs Exploration and Development Co., Ltd. Mr. E. S. Hallett has resigned from the board. Mr. J. C. Williams has been appointed an alternate director to Mr. Walker.

★

Mr. Phillips, editor and manager of the *Mining, Electrical and Mechanical Engineer* from its foundation in 1920 till 1947, died at his home in Bromley, Kent, on January 23. He was 81.

★

Mr. H. Hanson, deputy chairman and joint managing director of Turner and Newall, Ltd., has resigned owing to ill health. He first joined the organization over fifty years ago in a subordinate capacity. Mr. R. G. Soothill, who was formerly joint managing director with Mr. Hanson, has been appointed deputy chairman.

Mr. F. Graucob, managing director of Nu-Swift, Ltd., on his arrival in England from a tour covering several of the company's important Continental markets, stated that the value of Nu-Swift's exports in 1957 exceeded £250,000. The company's sales in 1957 were an all-time record, at home and abroad.

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In December last year, the foundation stone was laid at Muland on the outskirts of Bombay, for a new factory for the manufacture of pneumatic power tools and plant. The ceremony was performed by Mr. Norman Readman, managing director of the Consolidated Pneumatic Tool Co., Ltd., of London, who was in India to complete the final arrangements for this new Indian organization. The new factory is expected to be completed about the middle of this year. The first full-scale production unit in India to specialize in the field of compressed air, it will be operated by Consolidated Pneumatic's Indian subsidiary, the Consolidated Pneumatic Tool Co., India (Private), Ltd. It is estimated that when in full production the new factory will employ an all-Indian labour force of some 300 or 400 workers, some of whom are already being trained at the works of the parent company in Fraserburgh, Scotland.

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The rapid expansion of their activities overseas has made it necessary for Evershed and Vignoles, Ltd., to open a branch office in Belgium. Opening on April 1, 1958, it will handle the company's whole range of electrical instruments, instrumentation and control equipment for Belgium, the Belgian Congo, and Luxembourg. The address of the new office is Evershed and Vignoles, Ltd., Succursale, 142 rue Gallait, Bruxelles.

CONTRACTS AND TENDERS

Pakistan

Tin ingot, 99.75 per cent purity, 11 tons 8 cwt. Tender No. DS.11/4967/NF/57. Bids to the Deputy Director-General, Department of Supply and Development, Chittagong. Closing date, 11/2/58. B.O.T. Ref. ESB/1708/58. Telephone inquiries to Chancery 4411, extension 738 or 771. Local representation essential.

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Schachtbau Thyssen, of Mannheim, has received from Cie. Royale Asturienne des Mines, Belgium, an order to equip a mine in Morocco for the exploitation of lead and zinc ore deposits.

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Metropolitan-Vickers Electrical Co., Ltd., has supplied many battery locomotives to various collieries of the National Coal Board, and recent orders have been for collieries in the Scottish Division. The first of these was for two 14-ton flameproof battery locomotives for use at Rothes colliery; these have now been commissioned, and a further two locomotives have been ordered for the same colliery. Six locomotives of the same type are also on order for Bilston Glen colliery. These locomotives have driver's cabs at both ends and employ a triple combination control, which is very economical in its demands on the battery.

Canada's Shopping List—I.

Mr. Gordon Churchill, Canadian Trade Minister and leader of the recent mission to Britain, has predicted that 1958 will see a large increase in trade between the two countries, chiefly because of the mission's work. In no field are the opportunities for British exporters likely to be greater than in the mining industry, already producing to the value of some $2,000,000,000 a year, which is expected to expand at about three times the rate of Canadian industry as a whole.

The Canadian mission found that the United Kingdom could supply nearly all categories of mining equipment which the Dominion needs, and many British manufacturers not hitherto selling to Canada have expressed their intention of entering this market. Steps are being taken in Canada to draw the attention of purchasers to the desirability of planning their requirements far enough ahead to give British suppliers, who are handicapped by distance, a reasonable chance of meeting delivery dates.

Recognizing the value of advance information, "The Mining Journal" proposes to publish, as and when available, news of coming programmes of mine equipment or re-equipment, thus helping British exporters to contact purchasing officers at an early stage, before specifications have been finalized and orders already placed.

New Potash Mine

The International Minerals and Chemical Corporation of Chicago, U.S.A., who are one of the largest potash producers in the United States, has announced plans to spend more than $20,000,000 in the next three years on construction of what is described as "The most modern and efficient potash mine in the world" at Esterhazy, Saskatchewan, about 150 miles north-east of Regina.

Mr. Louis Ware, president of the United States concern and its Canadian subsidiary, International Minerals and Chemical Corporation (Canada), Ltd., stated that work on a 3,000-ft. mine shaft and the first buildings had been under way since June. He anticipated the hole would be sunk and buildings completed probably some time in 1960. The company, he said, is capable of financing the entire project with its own funds, appropriating money each year as work progresses. But he added: "It may be desirable, at some later date, to secure additional capital in Canada, and this possibility is being studied."

Mr. Ware, whose company has a new office in Regina and sales offices in Montreal and Ottawa, forecast that the Saskatchewan mine would play an important part in "making the North American continent self-sufficient in its need for potash for centuries to come." He added that, with continued development of Saskatchewan's ore reserves by this company and others, Canada and the United States would ultimately account for a major part of the world's potash supply.

The mine shaft itself will cost about $4,000,000. Mining equipment, a refinery, large storage buildings, machine and repair shops, and additional plant facilities will account for the rest of the estimated cost. Because of the highly competitive nature of the potash industry, the mine will be fully mechanized and automated. Construction work on a development area of 450,000 acres is being undertaken by Utah Construction Company of San Francisco.

The Export Services Branch of the Board of Trade (Ref. CRE/651/58) states that manufacturers of mining and refinery equipment, machine tools, etc., interested in making offers to the American contractors should write direct to the Purchasing Agent, Utah Construction Company, Esterhazy, Saskatchewan. It is emphasized that in view of the exclusive American interest, firms quoting for equipment should be represented in Canada, and preferably be able to afford servicing facilities.

Copper Rand Chibougamau's Plans

Copper Rand Chibougamau Mines is engaged on a development programme which envisages first production by the spring of 1959 from its copper-gold property in the Chibougamau district. No machinery or equipment has so far been ordered and the size of the mill has yet to be finalized, but it is understood that the plant will have a capacity within the limits of 1,500 to 2,500 tons per day. The basic design of the plant is reported to be well advanced, metallurgical test work has been carried out, and the proposed site of the plant has been cleared in readiness for construction. Meanwhile, good progress is being made with the shaft-sinking programme. The company is controlled and financed by Patino of Canada.

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The extreme simplicity of this pump, its wide speed range of from 750 to 3,000 r.p.m. (it also runs successfully at 6,000 r.p.m.), extreme lightness and portability, make it an all-purpose pump. Delivery pressures up to 85 p.s.i. or 200 ft. head per stage may be employed (higher in approved cases), and suctions of 27½ in. of mercury are possible.

The unit can be supplied with the pump casing and rotor manufactured in materials best suited to the particular type of application: light alloy for portable units, Meehanite for process pumping, and bronze for marine work. Promising experiments with one of the newest chemical plating processes indicate that shortly the pumps will be available with a nickel finish inside and outside. The Company is already planning pumps of considerably greater sizes.

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An important feature making for great durability is the complete absence of metal-to-metal contact. All engaging surfaces are rubber-to-metal, fluid lubricated.

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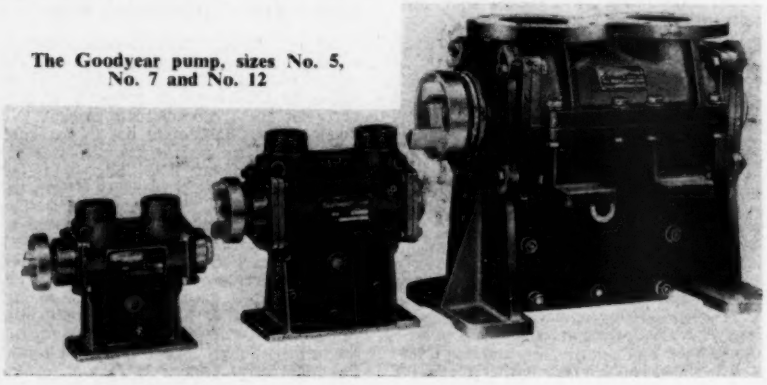

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Adoption of the committee's buying recommendations would limit future procurement of currently stockpiled materials to thirteen commodities (*vide* our issue of January 17, 1958, page 75). Three-year supplies of the remaining sixty-three stockpile commodities are on hand. Existing long-term purchases, it is suggested, should be terminated by negotiated settlement when adequate supplies are available.

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In certain respects the new stockpile recommendations are disconcerting and, if taken seriously, they could be most unhelpful to some commodity markets. Particularly disquieting is the possibility that one man (the Defence Mobilization Director) might eventually be given discretion "in the interest of national security" to sell up to 40 per cent of some existing stockpiles to reduce the five-year supply to three years. Hitherto, stockpile disposals have needed Congressional permission. Disposals of the vastly smaller British stockpiles, which lack this legislative safeguard, have often disrupted markets.

Precisely what is meant by "national security" in this particular context appears to be uncertain, but presumably the implication is that some of the stockpiled materials could be used to meet defence requirements if supplies could not be obtained from any other source. It could scarcely be in the national interest to sell stockpiled metals at a time when prices are low and the domestic mining industry is calling for greater protection from imports.

The committee recognizes that the timing and manner of stockpile purchases and sales can have far-reaching impacts on domestic and foreign markets and on foreign relations, but maintains that emphasis should always be on national defence and survival needs. The stockpile should not be used in attempts to regulate the nation's economy.

SAHARA PLATINUM

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KOREAN TUNGSTEN CONTRACT

Government approval has been given to an agreement between the State-owned Taehan Tungsten Corporation and the Continental Ore Corporation, New York, which gives the United States company exclusive rights for handling the sale of Korean tungsten for one year. A formal contract will shortly be signed in New York granting Continental Ore the right to buy 350 tons of tungsten a month during the year covered by the agreement.

Under the contract, Continental Ore will purchase tungsten from the Taehan Corporation at $11.00 per unit (the current New York price for foreign tungsten ore c.i.f. U.S. ports is $12.00 to $13.00 per s.ton unit). Total annual purchases of 4,200 tons of tungsten ore, averaging 70 per cent, will amount to $3,234,000. The price is subject to negotiation if the world market price of tungsten shows a substantial change. During 1957 the Taehan Corporation produced 3,800 tons, but it has the capacity to mine and process about 12,000 tons of ore a year. In 1953, when world demand was at its peak, the Corporation exported 11,742 tons of ore to the United States and earned $31,260,000.

When the new contract is signed in New York, Taehan will automatically suspend its own monthly sale of ore in the world market. South Korea's privately owned small tungsten mines, with a combined maximum output of about 500 tons a year, will continue to operate on the world market independently.

AMERICA USED LESS SILVER DURING 1957

The silver situation last year was largely a repetition of 1956, report Handy and Harmon in their *Review of the Silver Market in 1957*. The market continued to be dominated by the United States' silver laws and the Treasury's policy under these laws. In the United States, consumption of silver in the arts and industries amounted to 95,000,000 oz., being 5 per cent lower than in 1956. Industrial uses continued to account for "substantially" more than half the total United States silver consumption.

In the arts, most of the drop resulted

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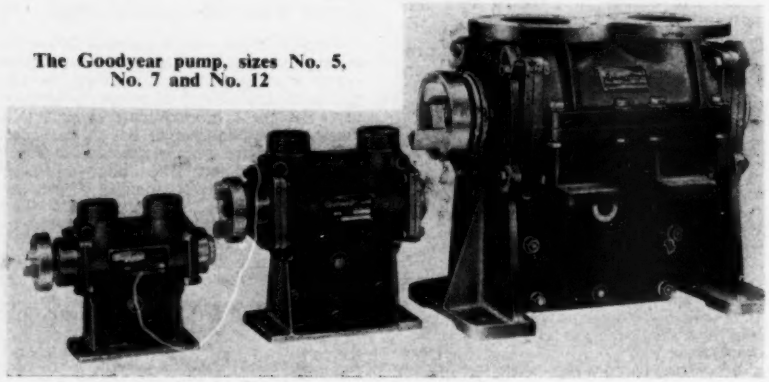

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Aluminium output in France during 1957 totalled 159,831 tonnes, compared with 149,774 tonnes in 1956. Of this total 131,931 tonnes was produced by Pechiney and the remainder by Ugine. Output in the Cameroons in the first year of production totalled 7,539 tonnes.

KOREAN TUNGSTEN CONTRACT

Government approval has been given to an agreement between the State-owned Taehan Tungsten Corporation and the Continental Ore Corporation, New York, which gives the United States company exclusive rights for handling the sale of Korean tungsten for one year. A formal contract will shortly be signed in New York granting Continental Ore the right to buy 350 tons of tungsten a month during the year covered by the agreement.

Under the contract, Continental Ore will purchase tungsten from the Taehan Corporation at $11.00 per unit (the current New York price for foreign tungsten ore c.i.f. U.S. ports is $12.00 to $13.00 per s.ton unit). Total annual purchases of 4,200 tons of tungsten ore, averaging 70 per cent, will amount to $3,234,000. The price is subject to negotiation if the world market price of tungsten shows a substantial change. During 1957 the Taehan Corporation produced 3,800 tons, but it has the capacity to mine and process about 12,000 tons of ore a year. In 1953, when world demand was at its peak, the Corporation exported 11,742 tons of ore to the United States and earned $31,260,000.

When the new contract is signed in New York, Taehan will automatically suspend its own monthly sale of ore in the world market. South Korea's privately owned small tungsten mines, with a combined maximum output of about 500 tons a year, will continue to operate on the world market independently.

AMERICA USED LESS SILVER DURING 1957

The silver situation last year was largely a repetition of 1956, report Handy and Harmon in their *Review of the Silver Market in 1957*. The market continued to be dominated by the United States' silver laws and the Treasury's policy under these laws. In the United States, consumption of silver in the arts and industries amounted to 95,000,000 oz., being 5 per cent lower than in 1956. Industrial uses continued to account for "substantially" more than half the total United States silver consumption.

In the arts, most of the drop resulted

from reduced production of silver-plated ware, with sterling maintaining the levels of 1956. In the industrial field, the number of applications of silver and silver alloys continued to increase, but the total amount of metal consumed was lower, due largely to the general decline in the production of consumer durable goods. The significance of the stepped-up defence programme cannot as yet be evaluated, but it is already apparent that there are new and growing uses of silver in the missile field and in other advanced weapons, together with their increasingly technical control mechanisms.

Lend-lease again accounted for the major portion of United States silver imports, which rose last year to the new post-war peak of 198,400,000 oz. It is pointed out that 1957 was the year for repayment of all lend-lease obligations, subject to certain extension provisions, and receipts under this heading totalled 138,300,000 oz. Of the original obligation amounting to 410,800,000 oz., all has been repaid except for 27,700,000 oz. owed by Saudi Arabia and Ethiopia.

World consumption of silver last year is placed at 289,000,000 oz., being an increase of about 6 per cent over 1956, which is attributed to the more extensive use of silver for coinage. Total world production of silver during 1957 at approximately 222,700,000 was virtually unchanged from the previous year.

As regards the future outlook, it is pointed out that under present economic conditions, the amount of domestic silver needed by the United States market will undoubtedly be limited. The view is also expressed that, if there is no change in the silver policies of the United States, it is probable that a pattern of price stability will continue.

COPPER · TIN · LEAD · ZINC

(From Our London Metal Exchange Correspondent)

After the continuous decline in the copper price over the whole of last week, it was not surprising that there was some reaction on Monday. The tin market also has been active following the communiqué issued by the International Tin Council, whilst the lead and zinc markets have continued uninteresting.

COPPER PRICES STILL UNDER STRAIN

On Tuesday evening the Rhodesian Anglo American Group of producers announced that they were introducing a cutback in production, beginning in March, 1958, of about 10 per cent. A study of the full text of the communiqué shows, however, that this cutback is based on the anticipated production for 1958 and not on actual past production as in the case of the other cuts which have been announced. It would appear, in fact, that the Rhodesian Anglo American cut amounts to only about 3 per cent based on last year's output of a little over 220,000 tons, as the total loss through the closure of Bancroft is probably not more than 15,000 tons and an additional 5,000 tons through the closure of Kansanshi, of which the group were managers, against which there is to be an increase in the production at Rhokana and Nchanga of 13,000 tons.

As indicated last week, it is now thought that there is an approximate balance between output and consumption, if the figure of roughly 9,000 tons a month of metal is being absorbed by the U.S. Government against outstanding support contracts, but it must be remembered that producers have large stocks in hand which will continue to overshadow the market unless there is some appreciable increase in trade—which at the moment appears unlikely.

The whole price structure of copper is still strained, with the American producer-price remaining at 25 c. per lb.; the U.S. customs smelter price at 24 c. per lb.; dealer copper being on offer at least 1 c. per lb. lower; the Katanga price being equivalent to 21.55 c. per lb. New York, and at one time with the Metal Exchange price down to £160 per ton. It is obvious that some readjustment will have to take place, and the majority expect that this will be by a reduction in the two top quotations to a level which will bring the imposition of an American import duty into the picture as a probability.

Consumption on this side of the Atlantic still remains satisfactory, but with most users having satisfied a large proportion of their requirements through the medium of long-term contracts, any surplus parcels have a disproportionate effect on the L.M.E. quotation. In America, the final picture for 1957 as far as consumption of refined copper is concerned based on shipments of fabricated products, shows the total to be some 9 per cent below 1956, and, unfortunately, prophecies as to the rate of activity during the first half of this year are still gloomy.

EFFECTS OF TIN CUTBACKS

The communiqué issued by the International Tin Council had an immediate effect upon the price in London, as the majority of operators felt that the present price structure would now be maintained until the cutback in exports became effective at consuming points. But second reactions were that the buffer stock had been very much nearer to collapse than had been believed, and that it was only the recommendation that additional money should be supplied that would maintain the position. As there was no indication as to the likely reaction of the governments concerned, some doubt became apparent on the market, with the three-months' price once more going below the £730 mark for short periods.

The stocks in official warehouses showed an increase of 725 tons on Monday which indicates that the intake into the buffer stock is still being maintained at a high rate. There is no further evidence of consumers taking an active part in the market, and until this happens the majority opinion is that prices will remain around the £730 per ton mark for the next few weeks, although there may be some period of anxiety which will cause recessions from time to time in the forward quotation.

By and large, however, it is now considered that the buffer stock manager will be able to weather any possible storm and, as is pointed out elsewhere in this issue (see page 127), the pool will probably have to supply several thousand tons of tin before the end of June, which fact in itself means that the price level will reach £780 per ton. The size of the quota restriction was the cause of much comment, as it had been felt in some quarters that it would be politically impossible even to continue the original rate for a further period of three months after the end of March, but it is apparent now that the governments of producing countries concerned are going to do all they can to help the scheme. It would seem that the next major test will come in the middle of the year when the continuation of restrictions is considered, as obviously little relaxation can be permitted unless the buffer stock manager has been able to change a fair proportion of his holding of metal into cash. On Thursday morning the Eastern price was equivalent to £736¼ per ton c.i.f. Europe.

LEAD-ZINC STILL STEADY

The lead market has continued steady, and opinion in America is that the lead price there must be lowered as metal is still flowing into the U.S. for sale at approximately 1½ c. per lb. under the New York quotation of 13 c. per lb. Consumption, as with the other metals, remains satisfactory on this side of the Atlantic, but is considered very unsatisfactory in America.

The zinc market has maintained its firmer undertone, although demand still remains patchy and the shadows of a possible strike in the American automobile industry are now touching the market. To counteract this, there have been announcements of sizeable reductions in the availability of metal, the first being a further closing down of furnaces at Blackwell, Oklahoma, cutting back production by about 2,000 tons of metal per month, and the second the stopping of shipments of zinc concentrates from the main Australian producers, amounting to the equivalent of almost 2,000 tons of metal a week.

A large proportion of these latter concentrates are normally smelted in the U.K. so it looks as if production will be cut back in this country, although it is known that smelters have sizeable stocks of both metal and concentrates. It has further been announced in San Francisco that the Bunker Hill Co. is to cut its mining operations in Idaho to a 4-day in place of the present 5-day schedule.

Closing prices and turnovers are :

	Jan. 23		Jan. 30	
	Buyers	*Sellers*	*Buyers*	*Sellers*
COPPER				
Cash	£165¾	£165¾	£167	£167¼
Three months ..	£168	£168¼	£167¾	£168
Settlement ..	£165¾		£167¼	
Week's turnover	8,000 tons		9,475 tons	
LEAD				
Current ½ month	£72½	£72½	£73½	£74½
Three months ..	£72½	£72½	£74	£74½
Week's turnover	3,100 tons		5,900 tons	
TIN				
Cash	£730	£730½	£734½	£735
Three months ..	£713½	£714	£735	£735½
Settlement ..	£730½		£735	
Week's turnover	2,465 tons		1,780 tons	
ZINC				
Current ½ month	£62½	£62½	£64½	£64½
Three months ..	£62	£62½	£63½	£64
Week's turnover	4,875 tons		5,175 tons	

London Metal and Ore Prices appear on page 140.

Mining Finance

Bancroft Closes for a Year

Rhodesian Anglo American group announced yesterday a 10 per cent cut in copper production. This reduction, which is based on the group's " planned production " for the year beginning March, 1958, would amount to 27,000 tons and will be effected by closing down Bancroft for a year.

This announcement had been expected for some time, as the Rho-Anglo group was the only major copper producer not to have initiated a 10 per cent reduction in output. The fact that the group has only now come around to falling in line with the other major copper producers was generally believed to be because of the involuntary lowering of output by Bancroft mine which only managed to turn out approximately 13,500 tons last year instead of attaining its envisaged annual production rate of 40,000 tons.

Because of the difficulties encountered by Bancroft during its initial production stages, working costs have been unusually high, and this as much as anything else has, doubtless, prompted the group to close down the Bancroft mine.

Since the production at Bancroft was expected to be at an annual rate of 40,000 tons, the 27,000-ton reduction will be brought about by ceasing operations at Bancroft and giving Nchanga and Rhokana an additional output of 13,000 tons a year—the discrepancy between Bancroft's actual and potential output during this period.

In terms of the agreement as between Nchanga and Rhokana on the one hand and Bancroft on the other, the development of Bancroft and pumping operations at its difficult No. 1 shaft area, are to be maintained. The arrangement arrived at is that in exchange for Bancroft ceasing production for the year, Rhokana and Nchanga will pay Bancroft a sum sufficient to cover the interest on its loans, the continuation of primary development and pumping at the No. 1 shaft for this period.

The announcement states that after meeting these charges the profits of Nchanga and Rhokana, even at the present price level for copper, would be higher than if they themselves had agreed to accept a 10 per cent reduction in production. Bancroft has accepted the offer.

The arrangement in the long run should prove beneficial to Bancroft as it will put Bancroft into a position to continue primary development and pumping, so that after a year it will be able to resume production at the full rate of capacity of the plant and, therefore, at substantially lower costs than could have been obtained at present.

Against a wider background the result of this cutback in production now raises to well in excess of 200,000 tons the amount by which world production of newly-mined copper will be reduced.

It will be recalled that the idea of a 10 per cent cutback in production was originally initiated by Rhodesian Selection Trust and later followed by the Chilean Government. This is not to say that these were the first of the major producers to lower their copper production, as several cutbacks had been made in the mines throughout the world previously. But the R.S.T., in announcing a clear-cut 10 per cent reduction, set a pattern which could be easily measured and therefore followed.

Earlier this month the Chilean Government proposed a 10 per cent cut in output at the four American-owned and operated mines in Chile, but linked its recommendation with similar reductions being effected by other major producers. Subsequently, the other major producers came into line, and the present picture is believed to be one of equilibrium as between production and consumption.

THE PARADOX OF TANKS

At a time when world-wide cutbacks in copper production are the order of the day, and when the price of the red metal is hovering around the £165 mark, it is unusual, to say the least, to find a company intimately connected with the metal reporting a record year. Nevertheless, this is exactly what Captain the Right Hon. Charles Waterhouse was able to do at the meeting of Tanganyika Concessions last week. The paradox is simply explained. Tanks depends for its income on two main sources: its 14 per cent interest in Union Minière, one of the world's copper giants, and on its own subsidiary, the Benguela Railway, which specializes in the carrying of copper ores to the port of Lobito Bay. Both of these companies make up their accounts to December 31, whereas Tanks ends its year in August. There is thus a time-lag of almost a year before the effects of a changed metal price are reflected in Tanks' own accounts, and the year reviewed by Captain Waterhouse was, in effect, the calendar year 1956, when copper averaged £328 on the London Market.

The conclusion must, of course, be that next year's results will be well down

LONDON MARKET HIGHLIGHTS

What might be described as a king-sized ray of hope beamed on the Kaffir market in the early stages of the week to January 29, when rumours emanating from Canada suggested that an increase in the gold price was imminent. Higher gold price rumours occur from time to time, and usually the most response that they elicit is a shrug of the shoulders and perhaps a caustic comment.

But last week there was a feeling abroad that although the thing seemed unlikely, there was at last more chance —in view of America's growing economic troubles—of a readjustment of the gold price than had been considered possible in the last few years.

Consequently, stockjobbers, who for a long time now have had few shares of the older gold producers on their books, quickly marked up prices and quoted wider dealing margins as a precautionary measure against a revived demand catching them on the wrong foot.

No great increase of business was encountered, but what buying there was could only be satisfied at the higher price levels, and even then only in comparatively small amounts.

Daggafontein rose to 25s. 4½d., City Deep to 11s. 7½d., and many other gains were marked throughout the lists. "Ofsits" jumped to 56s. 9d. under the additional stimulus of their increased dividend and almost doubled profits.

Over the week-end, however, came an official United States denial that any increase in the gold price was anticipated. Despite the fact that some observers saw some significance in this denial and began to draw parallels with the sterling devaluation denials which were issued with monotonous regularity in 1949, enthusiasm for gold shares quickly dwindled and prices softened as a result.

One particularly dull stock was Buffelsfontein, which fell away to 34s. despite the recent reassuring official statements that no serious problems underground had been encountered. Free State Geduld now reacted from 1s. 9d. premium to a mere 4½d. premium, and to the accompaniment of new-issue talk, Free State Saaiplaas wilted to 12s.

Copper shares again followed the down-trend which was forecast here months ago. The depressing course of the metal price and the not very encouraging trend of Wall Street were only partly to blame. The real reason for the trend was the psychological effect on the market as a whole of the heavy selling—much of it from the Cape—of Bancroft in front of the decision to temporarily cease production at the mine.

Bancroft dropped from 14s. 3d. to 10s. 6d., the lowest since 1955. Others in the group lost ground, but steadied at the lower levels on a growing feeling that world cutbacks in copper output must by now be bringing production back to a level fairly close to consumption. Chartered weakened to 44s. 6d. on misgivings about the final dividend due soon, but later recovered to 45s. 3d.

Lead-zincs also eased, while selling of tin shares was based on consideration of the effects on company profits of the extended quota export restrictions coupled with the burden of cash contributions to the Buffer Stock. Ayer Hitam fell to 20s. and Kinta to 15s. among widespread losses.

Elsewhere, Platinums remained under the shadow of the setback in the metal and the passing of the Rustenburg group interim dividends. "Pots" fell to 4s. 4½d., Unions to 6s. 3d., and Waterval to 6s. 10½d.

on this year's. However, the Benguela Railway has actively sought new materials to carry, and Captain Waterhouse states that other classes of traffic have gone a long way towards closing the gap left by lower copper freights.

Captain Waterhouse's statement appears on page 142.

JANTAR'S ADDITIONAL QUOTA

At the annual meeting of Jantar Nigeria held last Wednesday, Mr. C. A. P. Tarbutt, the chairman, announced that the basis on which Jantar's quota for the first period of tin restriction was calculated has been raised from 156 tons to 206 tons. This means that during the three and a half month period ending on March 31, the company will be allowed to produce 51.6 tons of concentrates, instead of 39 tons in three months as was originally announced. The quota for the second three-month period, calculated on the same basis, will thus be 44 tons.

This will be welcome news, not only for Jantar's shareholders but also for investors in other companies which, at first sight, have fared exceptionally badly under the restriction, since it shows that some authorities at least are considering sympathetically the position of mines with special factors to be taken into consideration. In Jantar's case, it is stated that the additional quota is applicable in particular to the new Basal Lead, production from which started on a small scale last year.

Extracts from Mr. Tarbutt's statement appear opposite.

SCOPE FOR NORTH KALGURLI

Reports from Australia indicate that North Kalgurli (1912) is well maintaining its position as one of the leaders on the Kalgoorlie goldfield. An increase of 27,000 tons in ore reserves to a total of 2,244,482 tons has been reported for the year ended March 19, 1957; the average grade is estimated at 5.38 dwt. gold per ton, or 0.03 dwt. lower than in the previous year. Increased tonnage has resulted from a general improvement in the percentage of payable ore developed, increased ore widths, and extensions in some of the larger stopes. Development and drilling results have been satisfactory, and new exposures have been made.

FREE STATE GEDULD'S EXCELLENT VALUES

At the annual meeting of Free State Geduld held yesterday in Johannesburg, development since the end of the December quarter up to January 24 in the No. 1 shaft showed that of 235 ft. sampled 85.1 per cent proved payable, yielding average values of 1,224 in. dwt. This goes against 678 in. dwt. in this area in the December quarter.

In the No. 2 shaft area since the end of the December quarter, 620 ft. were sampled all of which proved payable, yielding 1,814 in. dwt. against 1,519 in. dwt. in the whole of the December quarter.

Diamond drilling at various points in the 47 haulage at the No. 1 shaft intersected the reef, giving very encouraging values which varied between 1,500 and 3,000 in. dwt.

JANTAR NIGERIA

The forty-fifth Annual General Meeting of the Jantar Nigeria Co., Ltd., was held on January 29 in London.

Mr. C. A. P. Tarbutt, Chairman and Managing Director, presided, and the following is an extract from his circulated Statement:

Output for the year was 279.5 tons tin and 255.5 tons columbite. Tin production was down by 25.5 tons, whilst columbite production was up by 28.5 tons.

The columbite market has steadily deteriorated during the year. Not only has the price weakened, but demand has decreased to the extent that part of our output for the current year is at present unsold, and the possibility of finding a market for our surplus will be difficult, if not impossible.

Basalt Lead: Progress on the Basalt Lead has now reached the production stage, though at present on a small scale. Eleven tons of tin have so far been won. Whilst results are encouraging, we have not yet got sufficient experience to enable us to assess the working costs on the planned scale production.

Net profit for the year, after taxation, amounts to £31,910.

The difficulties with which the company is faced necessitates the conservation of its cash resources, and despite the increase in profit, your Directors are unable to recommend a dividend in respect of the year to September 30, 1957.

Chairman's Additional Remarks: Since my statement was sent to stockholders, the basis on which your company's quota was calculated for the first quarter under the tin restriction scheme has been increased by 50 tons to 206 tons per annum. The increase of 50 tons relates to the Basalt Lead operation. Stockholders will have seen in the Press that the permitted quota for the first quarter (in our case, 51.6 tons) now has to apply to the period of three and a half months to March 31, 1958, and the quota for the quarter to June 30 will be calculated on this basis. Your company's permitted quota for the June quarter will therefore be 44 tons approximately, on the basis of 176 tons per annum.

Sales of columbite to date under firm contracts or contracts under negotiation, amount to 179 tons of the current year's output. Contracts entered into since the end of the company's last financial year have all been at lower prices than those previously negotiated.

The report and accounts were adopted.

OCCASION FOR SALE

TWO MINING LOCOMOTIVES 90 h.p., to be used for shunting, too; total weight, 12 tons; gauge, 600 mm.; in perfect condition, with important lot of spare parts; interesting price. Box No. 616, *The Mining Journal, Ltd.*, 15 Wilson Street, Moorgate, London, E.C.2.

Central Provinces Deny Rumour.—Central Provinces Manganese Ore have issued a statement denying rumours that the Board is seeking a change of ownership. The statement says that no negotiations are taking place.

LONDON METAL AND ORE PRICES, JAN. 30, 1958

METAL PRICES

Aluminium, 99.5%, £197 per ton
Antimony—
English (99%) delivered, 10 cwt. and over £190 per ton
Crude (70%) £190 per ton
Ore (60%) basis 19s. 6d./20s. 6d. nom. per unit, c.i.f.

Arsenic, £400 per ton
Bismuth (min. 1 ton lots) 16s. lb. nom.
Cadmium 10s. 0d. lb.
Cerium (99% net), £13 18s. lb. delivered U.K.
Chromium, Cr. 99% 7s. 2d. lb.
Cobalt, 16s. lb.
Germanium, 99.99%, Ge. kilo lots 3s. 4d. per gram
Gold, 248s. 10½d.
Iridium, £25/£28 10s. oz. nom.
Lanthanum (98/99%) 15s. per gram.
Manganese Metal (96%-98%) £310
Magnesium, 2s. 5½d. lb.
Nickel, 99.5% (home trade) £600 per ton
Osmium, £25 oz. nom.
Osmiridium, nom.
Palladium, £7 10s. oz.
Platinum U.K. and Empire Refined £27/10 oz.
Imported £26 0s./£26 10s. nom.
Quicksilver, £73 0s. ex-warehouse
Rhodium, £40/£42 oz.
Ruthenium, £15/£18 oz. nom.
Selenium, 53s. 6d. per lb.
Silver, 76¼d. f. oz. spot and 75¾d. f'd.
Tellurium, 15s. 16s. lb.

ORES AND OXIDES

Bismuth	65% 8s. 6d. lb. c.i.f. 18/20% 1s. 3d. lb. c.i.f.
Chrome Ore—	
Rhodesian Metallurgical (semifriable) 48%	£17 5s. 0d. per ton c.i.f.
" Hard Lumpy 45%	£18 0s. 0d. per ton c.i.f.
" Refractory 40%	£12 5s. 0d. per ton c.i.f.
" Smalls 44%	£16 5s. 0d. per ton c.i.f.
Baluchistan 48%	£12 0s. 0d. per ton f.o.b.
Columbite, 65% combined oxides, high grade	nom.
Fluorspar—	
Acid Grade, Flotated Material	£22 13s. 3d. per ton ex. works
Metallurgical (75/80% CaF_2)	156s. 0d. ex works
Lithium Ore—	
Petalite min. 3½% Li_2O	47s. 6d./52s. 6d. per unit f.o.b. Beira
Lepidolite min. 3½% Li_2O	47s. 6d./52s. 6d. per unit f.o.b. Beira
Amblygonite basis 7% Li_2O	£26 5s. per ton f.o.b. Beira
Magnesite, ground calcined	£28 0s./£30 0s. d/d
Magnesite Raw (ground)	£21 0s./£22 0s. d/d
Manganese Ore Indian—	
Europe (46%-48%) basis 77s. 6d. freight	nom.
Manganese Ore (43%-45%)	nom.
Manganese Ore (38%-40%)	nom.
Molybdenite (85% basis)	8s. 5d. per lb. (f.o.b.)
Titanium Ore—	
Rutile 95/97% TiO_2 (prompt delivery)	£41/£42 per ton c.i.f. Aust'n.
Ilmenite 52/54% TiO_2	£11 10s. per ton c.i.f. Malayan
Wolfram and Scheelite (65%)	93s. 0d./98s. 0d. per unit c.i.f.
Vanadium—	
Fused oxide 90-95% V_2O_5	£10 per unit c.i.f.
Zircon Sand (Australian) (65-66% ZrO_2)	£16 per ton c.i.f.

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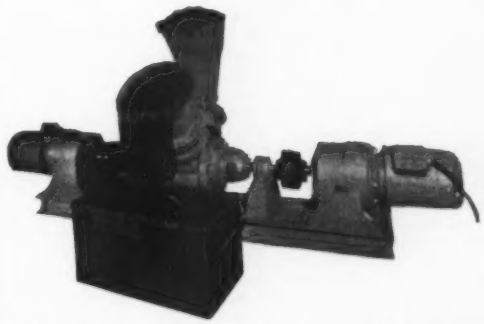

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TANGANYIKA CONCESSIONS LIMITED

CAPTAIN CHARLES WATERHOUSE'S REVIEW

SATISFACTORY PROGRESS MAINTAINED

The Annual General Meeting of Tanganyika Concessions Limited was held on January 23, 1958, at the Head Office of the Company, Tanganyika House, Salisbury, Southern Rhodesia. **Captain The Right Honourable Charles Waterhouse, M.C., D.L.,** the Chairman, presiding.

The following is an extract from his circulated review:

After observing the record profits that have been reported in recent years, it is very gratifying to be able to draw attention to even better results. The accounts in respect of the year ended July 31, 1957, show a record profit of £4,309,796, and the Directors have consequently been pleased to propose for the consideration of Stockholders at the Annual General Meeting a Final Dividend on the Ordinary Stock of 6s. 6d. per unit, which, if approved, will make a total dividend of 9s. 6d. per unit for the year. It must be emphasized, however, that these figures result from the operations of the Union Minière du Haut-Katanga and the Benguela Railway Company for the year ended December 31, 1956, and reflect the much higher copper prices then ruling.

In addition, the Board, for the reasons outlined in their report, have recommended a bonus issue of registered Ordinary Stock on the basis of one new Ordinary Stock Unit of 10s. for each Ordinary Stock Unit held on January 31, 1958.

The main source of the Company's revenue has again been the Union Minière du Haut-Katanga, which, because of its excellent results, was able to distribute a dividend of Belgian Francs 2,300 as compared with Belgian Francs 2,200 for the previous year. The Benguela Railway Company also made a substantial contribution by paying the interest for the year on both series of debentures and distributing a dividend of Escudos 16.50 per share, as compared with Escudos 11.00 per share for the previous year. Moreover, in addition to the redemption payment of £202,480 for the year 1956, a further £409,300 of the 4 per cent Income Debentures were redeemed.

Chairman's Address

The Chairman addressed the Meeting as follows:

Since the General Meeting of last year, your Company has suffered two heavy misfortunes in the deaths of Mr. Godfrey Hutchinson last March and of Sir Ernest Oppenheimer only a few weeks ago. Mr. Hutchinson had already left your Board and been replaced by his son, Mr. Robert Hutchinson. Sir Ulick Alexander has resigned from the Chair, Sir Ellis Robins has left Southern Rhodesia, but fortunately both still retain their places on the Board, and I am glad of this chance of expressing our appreciation of their great services. Mr. Arthur Crichton, who has been our guide, philosopher and friend over many years, and Sir Alfred Beit have retired from the Board. We are grateful for the work they have done for the Company. We are glad to welcome today Sir Andrew Strachan, who has replaced Sir Ellis Robins as a member of the Board resident in Southern Rhodesia.

In the financial year we are considering, your Company made a record net profit of £4,309,796, which reflects profits earned in 1956 by the Union Minière and by the Benguela Railway Company, which in both cases exceeded any previous record. I must remind you, if indeed you need any such reminder, that in 1956 the average price of copper on the London Metal Market was £328 per ton, while the similar figure for last year, the year 1957, was only £219 per ton, and since then there have been further falls in the price of the metal.

On January 3 of this year, the Union Minière paid an Interim Dividend after taxation of 750 Belgian Francs. Last year that Company paid two Interim Dividends, each of 700 Francs, but we cannot expect a second Interim Dividend in respect of the year 1957. Those engaged in winning copper and other non-ferrous metals are certainly going through a difficult time, but we have every confidence that the knowledge and experience of those in control of the Union Minière will enable that Company to weather this particular economic disturbance with the minimum of discomfort to its shareholders, of which your Company, with a holding of approximately 14 per cent of the issued shares, is one of the principal.

The Benguela Railway Company

The fall in the price of copper is, of course, directly reflected in the freight rates charged by your subsidiary, the Benguela Railway Company, for the transport of the metal, and the figures for 1957 must on that account show a decrease on those for 1956. I am, however, happy to be able to say that other classes of mineral traffic, and especially iron ore from the Province of Angola, have done much to fill this gap, and to increase the Railway's already large contribution to the development of Angola's economy. Two years ago your Chairman, Sir Ulick Alexander, spoke in forthright terms about the railway, its functions and its future. We may be sure that his words reached far outside this room, for in the last two years the public has begun to realize that the Benguela Railway is far more than a local line, and is, in fact, one of the main arteries connecting Central Africa with the rest of the civilized world.

The Board and management of the Railway are to be congratulated on the results achieved. The able Chairman, Dr. Pinto Basto, is fortunate in having on the Board a group of Portuguese gentlemen with outstanding qualifications, and it is appropriate that I should mention the high honour done to his colleagues, Dr. Manuel Fernandes, in his appointment as a Judge of the International Court of Justice at The Hague, and to Dr. Supico Pinto, in his appointment as President of the Corporative Chamber, which, with the Chamber of Deputies, constitutes the Portuguese Parliament.

In December, 1957, the Portuguese Government authorized an increase in the capital of the Benguela Railway from Escudos 330,000,000 to Escudos 660,000,000. This increase was obtained by re-valuing the assets of the Company by Escudos 220,000,000 and by transferring Escudos 110,000,000 from Reserves. Although this transaction in no way increases the earning capacity of the Railway, we feel that our share of the capital increase is some compensation for the debentures subscribed by us, which, because the Railway was not earning sufficient profits in past years, were cancelled without payment.

In this context, it is well that we should bear in mind that the proposed Capital readjustment of Tanganyika Concessions itself would be no more than a restoration of the reduction made in 1938.

A Major Achievement

As you are aware, we have, through our associated company, Tanganyika Holdings, Limited, been contributing since 1953 to the expenditure incurred by Rio Tinto (Northern Rhodesia), Limited, in the exploration of approximately 12,000 square miles of territory.

Since the Report and Accounts were issued to Stockholders, Rio Tinto (Northern Rhodesia), Limited, have informed us that the results so far achieved in Northern Rhodesia indicate that the methods being used there are soundly conceived, and that, although no orebody of economic grade and tonnage has been established, the exploration methods have succeeded in locating mineralized areas. In particular, they regard the identification of the Lower Roan series, where this had not been previously known to occur, as a major achievement, and they have accordingly put forward proposals for further substantial expenditure to be incurred during the next few years. The Boards of your Company and the Zambesia Exploring Company, Limited, have agreed to continue to provide Tanganyika Holdings, Limited, with the necessary finance to maintain their contribution to this project.

Your Company's wholly owned subsidiary, Tanganyika Properties (Rhodesia), Limited, has, as you know, a considerable investment in Border Forests (Rhodesia), Limited, who own large forestry estates in the Eastern Districts. I am glad to be able to report favourably on that Company's progress. The planting of the total afforestable area with pines is nearing completion. A sawmill is in process of erection on one of the Estates, and in due course will produce sawn timber for the market.

In all these matters your Company, its subsidiaries, and its associated companies owe much to the loyal and devoted work of their staffs, and on behalf of the shareholders I offer them my thanks.

The Report and Accounts were adopted, the payment of the final dividend was approved, and the retiring Directors were re-elected. The two Ordinary Resolutions which provided for a bonus issue of Ordinary Stock from the existing unissued capital to be effected by the capitalization of reserves, and the Special Resolution for the amendment of Article 13 of the Company's Articles of Association, were duly passed.

REQUIRED: OPPORTUNITY TO PROSPECT in any part of the Tropics. Experienced diamond and churn driller, bush work preferred, age 30, seven years' mining and prospecting (alluvial and lode) experience. Available for interview on or after January 28, 1958. Box No. 615, *The Mining Journal, Ltd.*, 15 Wilson Street, Moorgate, London, E.C.2.

Supplement to **The Mining Journal**—January 31, 1958

The Mining Journal

ANALYSIS OF RAND AND O.F.S. QUARTERLIES

CONFIDENCE—THE KEY TO A KAFFIR REVIVAL

WEDDED as investors have become to the idea that basic indicators are a reasonably accurate reflection of the economies on both sides of the Atlantic, it is not altogether surprising that Kaffirs have failed to show any marked advance over the past three months. Yet, in general terms, the substantive factors necessary for the creation of conditions favourable to Kaffirs are as plainly evident now as they were three months ago.

Seven per cent Bank Rate has tumbled the industrial market and with it the *Financial Times Industrial Ordinary Index*. On the other side of the Atlantic the persistent drop in steel production, mounting unemployment, falling car sales, lower carloadings, and the deferment of capital expenditure projects has humbled the *Dow Jones Index*. On the Continent the French franc is still under pressure and some of the steam has gone out of the German industrial machine. Moreover, against a world-wide background, the need to increase liquid reserves is as pressing a problem as ever.

Why then has the Kaffir market failed to respond to its traditional opportunity? The answer to this question lies partly in the fact that whereas the *Dow Jones Index* is mirroring the economic situation in the United States (showing thereby that America is experiencing a recession of more than mild proportions), the fall in the *F.T. Ordinary Index* is largely a function of the high Bank Rate coupled with a sympathetic reaction to a weak Wall Street.

Sterling — The Linchpin

Certainly the precipitous falls in the prices of sound U.K. industrial equities have been grossly overdone in relation to their present earnings-dividend picture. And so long as the apparent picture is that once the Bank Rate is lowered industrials will recover, money seeking alternative investment outlets will continue to pile up rather than be switched into the Kaffir market.

Even more important is the behaviour of sterling, for this is the linchpin holding together those pieces in the jigsaw which fit either to form a picture of confidence or panic. Sterling over the past three months has gone from strength to strength. So much so that not only has the spectre of inflation receded but also hopes are now stirring that, provided the pending round of claims for higher wages can be stemmed, this country may succeed in overcoming its present difficulties. Accordingly, although investors are wary of the outlook and chary of investing they are not selling their holdings, preferring, instead, to sit tight and adopt a policy of wait and see. While this may make good sense at the moment, particularly as the high yields obtainable on "industrials" militates against switching into Kaffirs where, in some cases, yields are actually lower, the wisdom of investors is being tested by their assessment of what is going to happen in the United States over the next six months.

Without going over the ground again concerning the drop in U.S. steel production, the falling off in sales of automobiles, etc., prospects of an early recovery in the general business outlook can only be described as fair. At present, the U.S. Administration is busily engaged in easing credit facilities and generally following a cheaper money policy. But easier money trends have not as yet done anything to stimulate business activity, the view being widely held that such moves confirm former half beliefs that the much talked about business recession has virtually arrived. This attitude, reflecting as it does a basic lack of confidence in the economy, is going to be hard to eradicate over the short-term. In fact, without a positive response to lower interest and money rates, the inclination will be to do nothing for as long as possible by running down inventories, postponing capital expenditure projects and living, as far as is possible, on a hand-to-mouth basis.

If, indeed, this is the trend—and statistics soon to be released will either confirm or negative this view—the U.S. could be headed for a relatively severe business recession. Should this eventuate, the impact would be felt in almost every sector of this country's economy. This is a gloomy view; but it may prove to be realistic. In any event, there is little or no prospect of a sudden return of confidence and there may very well be a sharp downturn in industrial production with all that means to Wall Street and the *Dow Jones Index*.

In such conditions there is, of course, everything to be said for South African gold shares. However, it must be stressed that Kaffirs in particular and gold shares in general are not here recommended solely because they obviously represent the only safe haven for investment in the present circumstances.

The new mines have an intrinsic worth quite beyond their attraction as a hedge against depression. Although in one or two instances the yield available is down to around four per cent, the mines in question—St. Helena and Harmony—have only begun to pay dividends and their prospects of continuing to increase their distribution for some years to come seems assured. Other young mines in the O.F.S., Klerksdorp and Far West Rand, are giving more than double this yield and their potential earning capacity has as yet to be tested. More than that, the value and extent of the orebodies being exploited give every assurance of long and profitable lives.

Problem of the Older Mines

The older mines do, of course, present something of a problem with the yields obtainable varying from over 28 per cent down to 10 per cent. Moreover, it is with this section of the Kaffir market that investors have taken such a beating since 1949 when the last general devaluation of currencies took place. In many ways this is doubly unfortunate, for gold mines, like people, are sometimes worth more dead than alive. Up to now, break-up assessments have been a specialized business calling for expert knowledge. But if the "Houses" were prepared to do some rethinking about what help they can give investors during the closing years in the life of a mine, it ought to be possible to maintain investment interest until the mine closes. One point in particular which should lend itself to discussion is that capital returns should begin at a much earlier stage than is now the case.

Since the opening up of the new gold fields in the O.F.S. and in the Klerksdorp areas, the established producers have not received much attention. Prices have been drifting for some years and while much of the "glamour" connected with the newer mines has long disappeared, yields now obtainable discount all but conditions of runaway inflation. There are, too, many of the older producers operating on very small profit margins and these so-called "marginal mines" are the subject of an investigation by a

(*Continued on page 5*)

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FINANCIAL RESULTS

(Cumulative and comparative "this" financial year to December 31st, 1957 with "last.")

GROUP	COMPANY	ORDINARY SHARES IN ISSUE	Months since year end	PROFIT AND LOSS RESULTS £(000)								Current financial Year's capital expenditure (Gold)	EARNINGS, DIVIDENDS & YIELD						
				Working Profit		Uranium Profit After Loan Repayment		Taxation and/or Mining Lease		Net Profit After Tax			Earned in current year to date	Paid					Yield on Price 27/11/58
														1956		1957			
				This	Last	This	Last	This	Last	This	Last	£(000)		s. d.	s. d.	s. d.	s. d.		(0/0)
Gold Fields	*Doornfontein*	9,828,000 (10/–)	6	1099·4	815·7	83·2	15·2	—	—	1192·0	834·5	306·8	2/5	—	—	6	1 0		6·5
	Libanon	7,937,300 (10/–)	6	319·5	328·0	—	—	—	—	326·6	334·8	206·4	10d.	3½	3½	3½	3½		8·6
	Luipaards Vlei	4,969,105 (2/–)	6	5·9	61·9	363·0	225·5	152·1	101·6	221·5	191·3	17·8	10d.	10½	10½	1 0	1 1		21·9
	Rietfontein	1,122,252 (5/–)	12	193·3	211·3	—	—	80·6	91·7	116·2	122·9	—	2/1	1 1	1 1	1 1	1 1		26·0
	Robinson	2,000,000 (7/6)	12	116·4	55·3	—	—	—	—	155·5	75·7	15·7	1/7	3	6	6	9		18·5
	Simmer	6,750,000 (2/6)	12	225·3	177·1	—	—	23·7	12·1	240·4	184·2	10·3	9d.	5	5	5	5		21·5
	Sub Nigel	1,771,875 (10/–)	6	170·8	322·9	—	—	63·6	127·7	120·9	201·9	23·4	1/4	2 4½	2 4½	1 9	1 6		27·6
	Venterspost	4,900,000 (10/–)	6	341·7	405·6	—	—	76·7	76·0	273·7	339·3	52·2	1/2	10½	10½	10½	10½		13·2
	Vlakfontein	6,000,000 (10/–)	12	1020·8	964·1	—	—	462·3	393·1	569·4	580·1	4·6	1/10	9	10	10	11		12·0
	Vogels	5,028,571 (10/–)	12	636·5	992·3	347·0	319·0	394·1	491·5	594·7	836·2	7·9	2/4	1 8	1 6	1 4	1 2		27·0
	W. Drie	7,041,080 (10/–)	6	3551·5	3461·1	107·8	16·3	1346·9	1296·8	2333·0	2148·1	1445·1	6/8	3 0	3 0	3 3	3 6		7·2
Anglo Americas	Brakpan	4,600,000 (5/–)	12	166·8	168·2	—	—	19·7	17·3	160·6	163·2	142·2	9d.	4½	6	4½	4½		17·2
	Dagga	7,000,000 (5/–)	12	3248·9	3389·1	1166·4	1044·8	2661·9	2571·8	1788·3	1896·9	59·2	5/2	2 9	2 9	2 6	2 9		20·4
	E. Dagga	3,730,000 (10/–)	12	417·2	410·9	—	—	165·7	151·7	262·5	270·3	9·2	1/5	9	9	9	9		19·6
	F. S. Geduld	10,000,000 (5/–)	3	923·0	286·2	—	—	—	—	923·0	286·2	518·8	2/2	—	—	—	1 0		—
	Loraine	16,453,372 (10/–)	3	L 38·2	L 23·5	54·7	22·6	—	—	16·5	L 0·9	85·0	—	—	—	—	—		0
	P. Brand	13,000,000 (5/–)	3	1251·9	1145·1	89·2	69·0	—	—	1321·1	1231·6	340·7	2/–	1 6	2 0	2 6	2 6		10·2
	P. Steyn	13,000,000 (5/–)	3	570·4	600·7	110·8	104·5	—	—	681·2	705·2	44·2	1/–	9	1 0	1 3	1 6		10·0
	S. A. Lands	2,475,000 (3/6)	12	738·2	808·8	—	—	284·0	362·5	466·6	459·7	179·0	3/9	1 6	1 6	1 6	1 6		15·6
	Springs	10,110,000 (5/–)	12	95·2	130·3	—	—	20·8	15·3	84·9	125·7	—	2d.	2¼	3	—	0·0		20·0
	Vaal Reefs	10,000,000 (5/–)	12	1993·2	756·1	1085·3	422·1	—	—	3094·5	1180·0	2492·0	6/2	—	1 0	1 3	2 3		8·8
	Welkom	12,250,000 (5/–)	3	189·8	136·0	99·1	—	—	—	288·9	140·7	221·4	6d.	—	—	—	3		—
	W. Holdings	7,496,376 (5/–)	3	1095·5	760·2	—	—	—	—	1095·5	760·2	372·9	2/11	1 6	2 0	2 0	3 0		5·6
	W. Reefs	7,000,000 (5/–)	12	817·6	626·3	1030·2	993·2	947·6	607·3	1018·5	1030·3	45·2	2/11	1 3	1 3	1 3	1 3		9·8
Central Mining	*Blyvoor*	24,000,000 (2/6)	6	2658·1	2607·2	555·9	355·2	1818·6	1543·6	1465·1	1482·1	89·0	1/3	1 0	1 0	1 0	1 0		10·4
	City Deep	2,026,832 (£1)	12	175·5	69·0	—	—	5·4	—	262·9	124·1	188·5	2/8	—	6	6	6		8·4
	Cons. M. R.	1,247,602 (£1)	6	57·4	56·3	—	—	4·4	4·2	67·8	71·5	—	1/1	1 6	1 6	1 3	1 3		20·8
	Crown	1,886,125 (10/–)	12	46·3	196·2	—	—	23·4	35·4	196·0	280·9	Cr.85.4	2/1	3 0	2 0	1 0	1 3		10·4
	Durban Deep	2,325,000 (10/–)	12	618·4	634·7	—	—	132·2	120·9	572·7	574·5	45·7	4/9	1 3	1 6	1 6	1 6		11·6
	E. Rand Prop.	3,960,000 (10/–)	12	1802·8	2134·4	—	—	485·3	644·5	1454·5	1590·2	477·2	7/4	2 0	2 6	2 3	2 3		11·7
	Harmony	18,000,000 (5/–)	6	1001·5	976·4	432·7	299·3	0·3	0·1	1447·2	1297·7	832·9	1/8	6	6	6	9		4·1
	Modder E.	930,805 (£1)	6	18·2	51·3	—	—	6·0	8·8	24·3	54·8	—	6	1 0	1 0	1 0	9		15·6
	Rose Deep	700,000 (9/6)	12	7·3	5·5	—	—	3·2	5·7	58·2	15·2	Cr. 14·9	1/8	—	—	—	—		0
	T'vaal G.M.E.	952,500 (1/3)	12	31·1	L4·1	—	—	—	—	21·9	45·9	Cr. 10·1	5d.	5	10	—	—		—
J.C.L.	*E. Champ d'Or*	2,079,000 (2/6)	12	72·4	94·3	(a)	(a)	21·3	23·4	51·5	96·7	—	5d.	3	7	3	3		23·3
	Freddies C.	16,359,913 (£1)	12	159·7	L172·1	(a)	(a)	—	—	106·3	L225·5	67·3	2d.	—	—	—	—		0
	Govt. G.M.A.	5,600,000 (5/–)	12	L57·0	16·5	—	—	30·5	32·8	197·3	314·1	44·9	8d.	3	3	—	—		—
	Randfontein	4,063,553 (£1)	12	1311·5	1257·6	(a)	(a)	354·0	15·7	972·3	1259·3	25·0	4/10	2 6	2 6	2 3	2 6		18·4
Union Corporation	E. Geduld	9,000,000 (4/–)	12	3488·3	3807·5	—	—	1863·6	2041·4	1770·4	1910·6	16·2	3/11	2 0	2 3	2 0	2 0		19·0
	Geduld Prop.	1,460,857 (£1)	12	262·4	376·8	—	—	59·3	110·6	954·3	1059·2	—	13/1	6 9	7 6	6 3	6 6		22·7
	Grootvlei	11,438,816 (5/–)	12	2641·4	2751·1	—	—	1362·2	1407·4	1350·4	1417·9	40·2	2/4	1 1	1 4	1 1	1 3		16·4
	Marievale	4,500,000 (10/–)	12	1007·0	1039·1	—	—	468·9	497·6	567·6	570·7	24·3	2/6	1 0	1 3	1 0	1 3		13·0
	St. Helena	9,625,000 (10/–)	12	2232·8	2083·5	—	—	—	—	2271·8	2077·7	1068·0	4/9	6	7	9	10		4·2
	Van Dyk	5,532,000 (9/–)	12	1859·7	21·3	—	—	—	—	201·6	59·7	—	9	—	—	—	—		0
General Mining	*Buffelsfontein*	11,000,000 (10/–)	6	1063·9	—	570·8	—	—	—	1663·4	—	650·4	3/–	—	—	—	1 6		—
	Ellaton	787,500 (5/–)	6	165·6	115·7	82·7	73·4	—	—	256·7	191·7	Cr. 2·5	6/6	—	—	—	—		0
	Stilfontein	13,062,920 (5/–)	12	3719·8	2545·4	558·6	389·4	—	—	4306·3	2960·3	1274·7	6/7	6	6	1 0	1 0		8·1
	S. Roodepoort	1,420,662 (10/–)	6	144·6	143·2	—	—	61·0	58·1	92·4	92·3	16·7	1/4	1 1½	1 1½	1 1½	1 1½		—
	W. Rand Cons.	4,250,000 (10/–)b	12	2520·4	2557·6	(a)	(a)	1051·0	1015·0	1338·5	1414·1	111·9	4/9(c)	1 9	2 3	2 0	2 3		18·1
Anglo-T'vaal	*Hartebeestfontein*	9,000,000 (10/–)	6	1878·8	1244·4	1200·6	305·9	—	—	3069·9	1494·0	1028·8	6/10	1 6	1 6	2 6	3 0		9·6
	N. Klerksdorp	300,000 (5/–)	12	L75·5	L65·9	119·6	116·8	0·1	—	49·1	53·8	19·7	3 3	—	—	—	—		—
	Rand Leases	3,600,000 (10/–)	6	36·9	—	—	—	2·5	—	66·8	L169·1	14·5	4d.	1½	1½	1½	3		10·0
	Village Main Reef	6,068,457 (1/3)	6	28·0	50·5	—	—	7·4	10·0	24·4	43·8	—	1d.	1	1	1	1		—
	Virginia	13,278,952 (5/–)	12	757·6	460·7	1587·0	1087·2	—	—	2161·6	1354·6	2166·8	3/3	—	—	—	—		—
Others	N. Kleinfontein	1,735,000 (£1)	12	L41·9	7·2	—	—	—	0·3	L33·5	15·6	—	—	—	—	—	—		—
	Spaarwater	7,974,968 (5/–)	12	4·5	6·4	—	—	—	—	6·4	7·7	Cr. 0·8	—	—	—	—	—		—
	Wit Nigel	7,974,720 (2/6)	6	38·2	41·7	—	—	—	—	45·3	45·9	2·4	2d.	—	—	—	—		—

(a) Included under working profit. (b) And deferred shares.

DEVELOPMENT AND MILLING RESULTS

(Cumulative and comparative "this" financial year to December 31st, 1957 with "last.")

GROUP	COMPANY	Months since year end	TOTAL ORE RESERVES			DEVELOPMENT RESULTS						MILL THROUGHPUT													
						Payability						Tonnage				Gold Recovered						Working Profit			
						Ft. Sampled (000)		%		Av. Value (In.-dwt.)		Milled (000)		Cost per Ton		Ounces (000)		Grade (dwt.per ton)		Cost per ounce		Per ton		Per oz.	
			Tons (000)	Value (dwt.)	Inch dwt.	This	Last	This	Last	This	Last	This	Last	This	Last	This	Last	This	Last	This	Last	This	Last	This	Last
Gold Fields	*D'nfontein*	6	1,956	7·4	300	12·9	9·7	90	90	430	549	512	446	60/7	63/5	211·6	177·6	8·3	8·0	146/5	159/4	42/11	36/10	103/11	91/10
	Libanon	6	2,463	4·7	227	11·6	8·5	66	78	263	286	616	580	45/7	45/–	137·8	129·8	4·5	4·5	204/5	201/2	10/4	11/4	46/4	50/6
	Luipaards Vlei	6	1,628	4·4	176	10·5	12·7	70	67	237	222	440	499	44/4	42/8	78·4	89·6	3·6	3·6	248/11	237/9	3d.	2/6	1/6	13/10
	Rietfontein C.	12	194	5·1	263	6·1	8·2	48	43	418	429	291	308	45/–	43/3	67·8	70·0	4·7	4·5	193/4	190/3	13/3	13/9	57/2	60/4
	Robinson Dp.	12	1,338	4·5	246	7·5	5·8	39	52	341	341	909	916	49/–	49/6	187·2	185·3	4·1	4·1	237/10	244/8	2/7	1/2	12/5	5/11
	Simmer	12	994	4·2	187	24·1	24·0	40	52	295	306	1,151	1,208	42/7	41/3	213·9	213·0	3·7	3·5	229/2	233/10	3/11	2/11	21/1	16/8
	Sub Nigel	6	833	7·7	291	11·8	16·2	24	16	323	306	400	400	54/8	55/11	101·0	114·7	5·1	5·7	216/4	194/11	8/7	16/2	33/10	56/4
	Venterspost	6	2,263	5·4	292	20·0	17·1	60	66	424	513	735	743	51/–	48/11	177·0	176·7	4·8	4·8	211/11	205/10	9/3	10/11	38/8	45/11
	Viakfontein	12	1,566	8·1	327	29·6	28·0	47	42	383	395	593	544	55/6	54/4	211·9	195·1	7·2	7·2	153/6	151/6	34/5	35/5	96/4	98/10
	Vogels	12	2,321	5·3	224	40·5	38·8	28	27	272	264	1,185	1,203	47/3	45/4	273·6	295·9	4·6	4·9	204/8	184/4	10/9	16/6	46/6	67/1
	W. Drie	6	2,080	16·8	711	8·2	11·2	100	100	663	821	450	450	82/3	81/2	431·5	419·9	19·2	18·7	85/9	87/–	157/10	153/10	164/8	164/11
Anglo American	Brakpan	12	2,367	5·0	254	37·2	45·1	28	27	729	671	1,354	1,284	38/6	40/2	220·8	218·4	3·3	3·4	236/4	236/3	2/6	2/7	15/2	15/5
	Dagga	12	10,246	5·4	232	25·8	25·6	23	29	329	381	2,718	2,637	30/9	31/1	591·4	595·1	4·4	4·5	141/7	137/9	23/11	25/8	109/10	113/10
	East Dagga	12	4,686	4·4	162	24·4	25·8	38	30	498	376	1,128	1,139	34/3	34/2	187·0	187·3	3·3	3·3	206/10	207/8	7/4	7/3	44/8	43/11
	F. S. Geduld	3	1,899	18·7	880	3·9	3·0	93	100	1,153	1,482	190	139	79/4	76/1	134·3	64·8	14·1	9·3	112/2	163/2	97/2	41/2	112/3	88/4
	Loraine	3	1,044	4·2	187	6·1	8·0	23	30	357	389	184	180	53/1	50/6	36·1	34·3	3·9	3·8	270/6	264/11	L4/2	L2/7	L21/2	L13/8
	P. Brand	3	3,043	17·6	888	3·7	2·2	92	94	1,168	1,554	208	180	67/9	66/5	156·6	138·9	15·1	15·4	89/9	86/4	120/8	126/11	159/10	164/10
	P. Steyn	3	3,927	8·8	390	4·5	6·2	67	60	496	553	277	263	54/–	52/1	105·6	102·3	7·6	7·8	141/8	133/10	41/2	45/8	108/–	117/5
	S. A. Lands	12	3,643	5·6	242	16·8	31·5	37	33	393	401	1,072	1,071	38/4	38/3	224·6	227·5	4·2	4·2	182/11	180/1	13/9	15/1	65/9	71/1
	Springs	12	1,965	4·3	182	8·5	14·7	35	22	438	369	1,510	1,513	26/8	28/6	167·3	182·1	2·2	2·4	240/2	237/1	1/3	1/9	11/4	14/4
	Vaal Reefs	12	1,813	10·0	397	24·5	18·1	76	89	537	629	751	401	58/9	56/9	333·3	151·2	8·9	7·5	131/4	150/8	53/1	37/9	119/8	100/–
	Welkom	3	3,471	6·5	302	3·2	2·9	75	73	470	434	242	255	59/1	51/5	72·4	63·1	6·0	5·0	197/3	207/11	15/9	10/8	52/5	43/2
	W. Holdings	3	3,930	14·0	640	3·7	5·0	92	92	1,169	1,045	293	264	53/3	54/6	150·3	117·8	10·3	8·9	103/9	121/11	74/9	57/8	145/9	129/1
	W. Reefs	12	4,546	5·9	255	40·3	40·5	48	52	500	460	1,440	1,447	44/5	42/7	319·4	294·5	4·4	4·1	200/3	209/2	11/4	8/8	51/2	42/4
Central Mining	*Blyvoor*	6	6,310	12·7	582	8·2	10·1	89	89	679	981	619	632	63/11	58/11	370·1	355·3	12·0	11·2	106/11	104/9	85/10	82/6	143/8	146/9
	City Deep	12	4,015	5·8	243	23·2	29·9	31	38	295	331	1,780	1,851	46/11	47/8	348·0	357·4	3·9	3·9	240/2	246/8	1/11	9d.	10/1	3/10
	Cons. M. R.	6	2,690	4·2	215	7·8	13·1	32	30	240	296	920	992	36/2	33/10	137·0	138·0	3·0	2·8	242/10	243/4	1/3	1/2	8/4	8/2
	Crown	12	7,599	4·8	216	32·6	61·0	32	35	311	307	2,836	3,395	36/5	37/4	417·1	521·9	2·9	3·1	248/1	242/10	8d.	1/2	2/3	7/6
	Durban Deep	12	8,445	4·0	240	34·4	33·9	52	50	381	394	2,192	2,188	38/8	37/7	387·3	379·0	3·5	3·5	218/5	217/–	5/8	5/10	31/11	34/6
	E. Rand Prop.	2	5,590	6·4	302	11·6	18·2	53	45	414	456	2,634	2,548	50/4	48/3	673·6	661·5	5·1	5·2	196/10	185/10	13/8	16/9	53/6	64/6
	Harmony	6	2,292	8·6	452	7·1	5·4	91	81	619	501	495	463	59/8	56/5	197·7	181·6	8·0	7·8	149/3	140/4	40/5	42/2	101/4	107/6
	Modder E.	6	1,223	3·4	138	1·3	2·7	23	52	185	182	828	836	24/11	24/9	83·7	86·3	2·0	2·1	246/8	239/11	5d.	1/3	4/4	11/10
	Rose Deep	12	423	4·3	232	2·3	7·1	37	46	408	295	610	534	36/9	39/8	90·1	85·0	3·0	3·2	248/10	249/11	3d.	2d.	1/8	1/4
	T'vaal G.M.E.	12	53	9·4	—	7·2	5·3	26	49	346	249	165	210	58/10	57/6	35·5	41·9	4·3	4·0	273/5	288/9	3/9	L 5d.	17/6	L1/11
J.C.I.	*E. Champ d'Or*	12	167	1·0	31	7·5	9·1	—	—	—	—	142	160	—	—	4·3	8·6	0·6	1·8	—	—	—	—	—	—
	Freddies C.	12	1292	5·6	224	8·9	10·9	64	68	404	410	665	719	—	—	194·0	151·6	5·8	4·2	—	—	—	—	—	—
	Govt. G.M.A.	12	662	5·7	382	1·7	10·6	35	38	411	268	1,077	2,765	44/4	32/6	182·7	358·3	3·4	2·6	261/9	252/6	L1/1	2d.	L6/3	11d.
	Randfontein	12	537	4·5	230	1·6	3·0	31	53	173	233	2,343	2,788	—	—	234·0	264·6	2·0	1·9	—	—	—	—	—	—
Union Corporation	E. Geduld	12	9,300	6·0	312	8·9	6·5	54	52	247	256	1,615	1,720	33/8	33/1	496·0	531·0	6·1	6·2	109/7	107/2	43/2	44/3	140/8	143/5
	Geduld Prop.	12	800	3·6	205	9·5	14·4	42	38	220	280	1,144	1,245	35/2	33/8	181·3	197·3	3·2	3·2	221/10	212/7	4/7	6/1	28/9	38/2
	Grootvlei	12	14,000	4·5	212	20·2	22·0	44	48	199	228	2,357	2,344	31/1	30/5	503·5	504·9	4·3	4·3	145/4	141/3	22/5	23/6	104/11	108/11
	Marievale	12	5,200	5·3	244	22·8	25·5	32	38	230	271	854	855	42/2	41/5	224·4	224·4	5·3	5·2	160/5	158/–	23/7	24/4	89/9	92/8
	St. Helena	12	3,250	6·1	342	16·6	16·7	52	55	421	387	1,392	1,312	40/10	40/11	405·8	380·9	5·8	5·8	140/3	141/2	32/1	31/9	110/0	109/4
	Van Dyk	12	450	4·0	192	12·5	18·3	31	21	304	272	919	953	40/6	40/2	162·6	154·6	3·5	3·2	228/9	247/7	3/10	5d.	21/6	2/7
General Mining	*Buffelsfontein*	6	1,157	7·4	443	13·4	—	97	—	600	—	664	—	49/6	—	216·2	—	6·5	—	152/1	—	32/–	—	98/5	—
	Ellaton	6	533	7·5	312	4·8	3·9	69	56	445	341	195	195	38/11	42/6	43·6	42·2	4·5	4·3	174/2	196/4	17/–	11/10	76/–	54/10
	Stilfontein	12	4,361	9·9	388	15·3	16·8	92	90	436	499	1,231	1,079	54/3	52/4	564·7	428·6	9·2	7·9	118/8	131/8	60/5	47/2	131/9	118/9
	S. Roodepoort	6	1,125	4·9	225	7·9	6·6	32	38	310	252	177	174	42/4	41/11	41·6	40·6	4·7	4·7	180/2	179/11	16/4	16/5	69/6	70/6
	W. Rand Cons.	12	5,264	3·4	170	21·7	23·5	71	60	340	315	2,574	2,810	—	—	259·8	288·6	2·0	2·1	—	—	—	—	—	—
Anglo T'vaal	*Hartebeest*	6	2,101	9·8	394	17·4	8·0	95	92	451	471	515	420	64/4	65/5	282·5	206·8	11·0	9·8	117/4	132/10	72/11	58/4	133/–	118/5
	N. Klerksdorp	12	232	2·5	119	3·5	3·9	26	31	122	187	129	131	40/3	38/4	14·6	14·7	2·3	2·2	355/8	341/9	L11/9	L10/1	L103/5	L89/8
	Rand Leases	6	2,951	4·1	189	14·8	15·8	51	47	283	229	1,030	931	38/1	43/–	159·5	144·0	3·1	3·1	245/9	278/2	9d.	L4/2	4/8	L26/8
	Village M.R.	6	—	—	—	—	—	—	—	—	—	196	203	38/3	33/10	32·2	31·4	3·3	3·1	233/–	219/3	2/10	5/–	17/4	32/2
	Virginia	12	2,086	5·8	304	29·8	19·3	49	51	393	389	1,187	1,016	54/–	49/3	316·5	236·8	5·3	4·7	202/5	211/4	12/9	9/1	47/10	38/10
Others	N. Kleinf'ntein	12	1,734	3·4	150	17·9	23·4	38	34	297	237	1,172	1,235	30/8	29/6	140·1	145·8	2·4	2·4	256/8	259/11	L 9d.	1d.	L6/–	11d.
	Spaarwater	12	267	5·9	224	10·3	9·3	19	28	258	223	127	128	75/9	72/10	38·8	37·6	6·1	5·9	247/10	247/5	8d.	1/–	2/4	3/5
	Wit. Nigel	6	785	5·1	189	5·0	5·6	22	41	232	441	105	109	53/8	47/6	25·4	23·9	4·8	4·4	221/6	216/5	7/3	7/8	30/–	34/10

(c) After deferred share participation.

UNION CORPORATION, LIMITED.

(Incorporated in the Union of South Africa)

Directors' Reports of Gold Mining Companies Incorporated in the Union of South Africa, for Quarter ended 30th September, 1957.

London Office: Princes House, 95, Gresham Street, London, E.C.2.

EAST GEDULD MINES, LTD.

ISSUED CAPITAL .. £1,800,000 STOCK IN UNITS OF 4s. EACH

Tons Milled .. 377,000 Gold Produced (in oz. fine) .. 115,940
Yield per Ton milled (dwt.) .. 6.15

		Per Ton Milled s. d.
Working Revenue	£1,445,981	.. 76 9
Working Costs	639,102	.. 33 11
WORKING PROFIT	806,879	.. 42 10
Sundry Revenue, including dividends, less Sundry Expenditure	49,010	
TOTAL PROFIT (subject to Taxation and Government's share)	£855,889	
Estimated Taxation and Government's share of profit	£422,600	
Capital Expenditure	£982	

PAYABLE DEVELOPMENT

DEVELOPMENT :

	Footage driven	Footage sampled	Footage payable	%	Av. value dwt.	Width ins.	Inch/ dwt.
Main Reef	2,059	1,340	885	66	11.8	24	284

DIVIDEND: On 13th December, 1957, Dividend No. 52 of 2s. 0d. per unit of stock was declared payable to stockholders registered at 31st December, 1957. Dividend warrants will be posted about 6th February, 1958.

PAYABLE ORE RESERVES:

	Tons	Average value dwt.	Estimated stoping width—ins.
Ore Reserves at 31.12.57....	9,300,000	6.0	52

MARIEVALE CONSOLIDATED MINES, LTD.

ISSUED CAPITAL .. £2,250,000 IN SHARES OF 10s. EACH

Tons Milled .. 215,000 Gold Produced (in oz. fine) .. 56,475
Yield per Ton Milled (dwt.) .. 5.25

		Per Ton Milled s. d.
Working Revenue	£704,728	.. 65 7
Working Costs	452,928	.. 42 2
WORKING PROFIT	251,800	.. 23 5
Sundry Revenue less Sundry Expenditure	5,029	
TOTAL PROFIT (subject to Taxation and Government's share)	£256,829	
Estimated Taxation and Government's share of profit	£102,100	
Capital Expenditure	£6,018	

PAYABLE DEVELOPMENT

DEVELOPMENT :

	Footage driven	Footage sampled	Footage payable	%	Av. value dwt.	Width ins.	Inch/ dwt.
Main Reef	3,762	3,135	875	28	18.5	13	241
Kimberley Reef	5,142	2,545	790	31	11.9	19	227

DIVIDEND: On 13th December, 1957, Dividend No. 35 of 1s. 3d. per share was declared payable to shareholders registered at 31st December, 1957. Dividend warrants will be posted about 6th February, 1958.

PAYABLE ORE RESERVES :

	Tons	Average value dwt.	Estimated stoping width—ins.
Ore Reserves at 31.12.57			
Main Reef	4,100,000	5.4	46
Kimberley Reef	1,100,000	4.7	47

GEDULD PROPRIETARY MINES, LTD.

ISSUED CAPITAL .. £1,460,857 IN SHARES OF £1 EACH

Tons Milled .. 253,000 Gold Produced (in oz. fine) .. 40,059
Yield per Ton Milled (dwt.) .. 3.17

		Per Ton Milled s. d.
Working Revenue	£501,182	.. 39 7
Working Costs	461,950	.. 36 6
WORKING PROFIT	39,232	.. 3 1
Sundry Revenue, including dividends, less Sundry Expenditure	367,276	
TOTAL PROFIT (subject to Taxation)	£406,508	
Estimated Taxation	£ Nil	
Capital Expenditure	£ Nil	

PAYABLE DEVELOPMENT

DEVELOPMENT :

	Footage driven	Footage sampled	Footage payable	%	Av. value dwt.	Width ins.	Inch/ dwt.
Black Reef	1,969	1,870	930	50	3.8	48	183
Kimberley Reef	671	620	200	32	12.2	11	134

DIVIDEND: On 13th December, 1957, Dividend No. 86 of 6s. 6d. per share was declared payable to shareholders registered at 31st December, 1957. Dividend warrants will be posted about 6th February, 1958.

PAYABLE ORE RESERVES :

	Tons	Average value dwt.	Estimated stoping width—ins.
Ore Reserves at 31.12.57....	800,000	3.6	57

THE GROOTVLEI PROPRIETARY MINES, LTD.

ISSUED CAPITAL .. £2,859,704 STOCK IN UNITS OF 5s. EACH

Tons Milled .. 598,000 Gold Produced (in oz. fine) .. 127,521
Yield per Ton Milled (dwt.) .. 4.26

		Per Ton Milled s. d.
Working Revenue	£1,591,470	.. 53 3
Working Costs	934,132	.. 31 3
WORKING PROFIT	657,338	.. 22 0
Sundry Revenue less Sundry Expenditure	11,623	
TOTAL PROFIT (subject to Taxation and Government's share)	£668,961	
Estimated Taxation and Government's share of profit	£341,000	
Capital Expenditure	£7,344	

PAYABLE DEVELOPMENT

DEVELOPMENT :

	Footage driven	Footage sampled	Footage payable	%	Av. value dwt.	Width ins.	Inch/ dwt.
Main Reef	4,925	4,295	1,740	41	15.3	12	183
Kimberley Reef	612	495	150	30	21.3	8	170

DIVIDEND: On 13th December, 1957, Dividend No. 38 of 1s. 3d. per unit of stock was declared payable to stockholders registered at 31st December, 1957. Dividend warrants will be posted about 6th February, 1958.

PAYABLE ORE RESERVES :

	Tons	Average value dwt.	Estimated stoping width—ins.
Ore Reserves at 31.12.57....	14,000,000	4.5	47

WINKELHAAK MINES, LIMITED

(Incorporated in the Union of South Africa)

ISSUED CAPITAL .. 12,000,000 SHARES OF 10s. EACH

SHAFT SINKING

A further 2,116 feet of station cutting was done at Nos. 1 and 3 Shafts.

In order to increase hoisting capacity in the No. 3 Shaft area a parallel Shaft, No. 3B, 11 feet 6 inches in diameter, has been started some 350 feet to the north of No. 3 Shaft and will be used for handling men and material so that No. 3 Shaft can be used exclusively for rock hoisting. At the end of the quarter, No. 3B Shaft had been sunk 90 feet.

DEVELOPMENT

12,946 feet of development was done during the quarter of which 5,365 feet was on reef and sampled. 3,600 feet was payable and averaged 7.9 dwt. over 45 inches, equivalent to 354 inch/dwt.

A discount has been applied to development values to conform with adjustments which will be necessary in estimating ore reserves.

SURFACE DRILLING

The cementation hole drilled on the site proposed for No. 2 Shaft was completed at a depth of 3,500 feet. A total of 12,713 pockets of cement was injected into the borehole.

Three boreholes have been drilled during the quarter giving the following results:—

Borehole WS 17 drilled 3,100 feet west of No. 1 Shaft missed the Kimberley Reef due to faulting.

Borehole WS 18 drilled 3,600 feet north-west of No. 1 Shaft intersected the Kimberley Reef at 1,372 feet giving only low values.

Borehole WS 19 drilled 1,800 feet north of No. 3 Shaft intersected the Kimberley Reef at 2,064 feet. The original intersection was incomplete but gave 18.75 dwt. over 58.2 inches equivalent to 1,091 inch/dwt. A deflection with complete core recovery gave 25.25 dwt. over 60.0 inches equivalent to 1,515 inch/dwt.

REDUCTION WORKS

Work on the construction of the reduction works is proceeding satisfactorily.

EXPENDITURE

Winkelhaak Mines, Limited

Expenditure on Shafts, Plant and Equipment and General Expenditure amounted to £919,639.

Evander Township, Limited

Capital Expenditure by this Company amounted to £58,745.

ST. HELENA GOLD MINES, LTD.

ISSUED CAPITAL .. £4,812,500 IN SHARES OF 10s. EACH

Tons Milled .. 347,000 Gold Produced (in oz. fine) .. 101,183
Yield per Ton Milled (dwt.) .. 5.83

		Per Ton Milled s. d.
Working Revenue	£1,263,864	72 10
Working Costs	711,463	41 0
WORKING PROFIT	552,401	31 10
Sundry Expenditure less Sundry Revenue	5,668	
TOTAL PROFIT (subject to Taxation and Government's share)	£546,733	
Estimated Taxation and Government's share of profit	£ Nil	
Capital Expenditure	£321,291	

DEVELOPMENT :

PAYABLE DEVELOPMENT

	Footage driven	Footage sampled	Footage payable	%	Av. value dwt.	Width ins.	Inch/ dwt.
Basal Reef	11,815	4,930	2,445	50	15.5	32	496

No. 2 SHAFT was sunk **156** feet to a final depth of **5,528** feet below surface and **2,010** feet of station cutting was accomplished.

PAYABLE ORE RESERVES :

	Tons	Average value dwt.	Estimated stoping width—ins.
Ore Reserves at 31.12.57....	3,250,000	6.1	56

VAN DYK CONSOLIDATED MINES, LTD.

ISSUED CAPITAL .. £2,489,400 IN SHARES OF 9s. EACH

Tons Milled .. 222,000 Gold Produced (in oz. fine) .. 41,992
Yield per Ton Milled (dwt.) .. 3.78

		Per Ton Milled s. d.
Working Revenue	£524,249	47 3
Working Costs	441,420	39 9
WORKING PROFIT	82,829	7 6
Sundry Revenue less Sundry Expenditure	5,212	
TOTAL PROFIT (subject to taxation and Government's share)	£88,041	
Estimated Taxation and Government's share of profit	£ Nil	
Capital Expenditure	£ Nil	

DEVELOPMENT :

PAYABLE DEVELOPMENT

	Footage driven	Footage sampled	Footage payable	%	Av. value dwt.	Width ins.	Inch/ dwt.
Main Reef—all shafts....	2,390	1,990	490	25	7.4	39	288
No. 5 Shaft area included above.....	783	545	180	33	11.1	32	356

In addition **1,164** feet was driven on the Kimberley horizon. **785** feet was sampled all of which was unpayable.

PAYABLE ORE RESERVES :

	Tons	Average value dwt.	Estimated stoping width—ins.
Ore Reserves at 31.12.57....	450,000	4.0	48

In the case of each of the above Companies, discounts have been applied to development values to conform with adjustments which are necessary in estimating the ore reserves at the year end.

committee set up last year by the South African Government. Recommendations are expected to lead to some sort of subvention scheme being instituted which could usefully prolong the lives of these gold mines. To what extent a form of subsidy would make the shares of some of these mines more attractive depends on the nature of the scheme and not least on what qualifies as a " marginal mine ". The committee's report has now been with the government some weeks.

I.M.F. Technical Committee

Meanwhile, it is to be borne in mind that the pressing need to augment the world's liquid reserves was responsible for the International Monetary Fund forming a technical committee last year to study the issues involved in effecting this requirement by a devaluation of all currencies in terms of gold. In this connection the January issue of *The Banker* comments that, " From the standpoint of need, at least, there are today stronger arguments than ever for this move ". Assuming that the crux of America's present problem is to reconcile its internal economy with its external commitments, raising the price of gold must rank high on the agenda of those solutions which would meet the problem with the minimum effort and hardship.

The I.M.F. technical committee's report is also due to be released in the near future, and should it come out in a positive manner for an increase in the price of gold as a practical means of solving the problem of the shortage of liquidity, the value of any scheme which would prolong the lives of South Africa's marginal mines becomes obvious.

What of the outlook in the months ahead ? Some may aver that the essential prerequisite for any surge forward on the Kaffir market is the need to find the catalyst which will transform investors' apathy into sympathy with the South African gold share market. Confidence is not a simple thing and it remains to be seen whether, like the floating vote, it will flow back into the gold share market if the U.S. runs into heavy economic weather, or whether it will write off both investment alternatives and abstain.

The outcome of the South African elections on April 16 can scarcely be regarded as a significant market factor as, although there has been some resurgence of optimism within the United Party, most thoughtful observers in both the United and Nationalist Parties expect a Nationalist victory (albeit with a reduced majority) if only because the United Party in its present form and without a Smuts does not provide an acceptable alternative home for the bulk of Afrikaaners.

Political Developments

Marketwise, political developments after the election could be of greater interest. Undoubtedly, there are signs of the emergence of a fuller understanding of the racial problem in its widest context and of the necessity for finding a policy acceptable to Conservatives of all races in the Union and more in line with social and political thinking in the outside world. This awakening is not peculiar to one party, and there are many people in the Union who believe that with the passing from the political scene of the last of the pre-war political leaders (assuming Mr. Strydom's health compels this), a re-alignment of political forces within the Union could come about within two years. What effect this re-alignment is likely to have on world opinion provides the gold share investor with an interesting if, at the moment, somewhat idle speculation.

So far as the gold industry itself is concerned, it remains to be seen whether the steady progress made by the new mines over the past five years has provided a basis on which confidence in the future can be sustained. Certainly the new mines are fulfilling their early promise as the recent batch of excellent dividends testify. It was also encouraging to observe the manner in which the market stood up to the sad death of Sir Ernest Oppenheimer.

More specifically, there were several significant developments in the December quarterly reports, of which the borehole intersection on the St. Helena property (yielding 1,070 in. dwt.) is perhaps the most important. This result follows the shaft intersection in the September quarterly on this property, which yielded 5,904 in. dwt., and as the intersection occurred at a depth of 4,405 ft. at a distance of about 1,000 ft. from the middle of the company's common boundary with President Brand, it would appear that the upthrow fault running east through F.S. Geduld and Western Holdings extends into St. Helena, leaving a great deal more reef at shallower depths than expected, and indicating the existence of a large rich area.

Equally interesting was the 3,264 in. dwt. achieved in the No. 3 shaft at Western Holdings, and the 2,248 in. dwt. obtained in the new Harmony shaft which also yielded uranium values averaging 88.72 in. lb.

These high values at Harmony were obtained when the No. 2 shaft encountered the Basal Reef at 5,056 ft. below the collar. Subsequently, the richness of the area suggested by these figures was, perhaps, confirmed when stoping around the perimeter of the shaft itself gave average values of 2,127 in. dwt. gold and 107.8 in. lb. uranium. Furthermore, the " A " reef, which overlies the Basal by some 500 ft., also promises to be payable as gold values averaged 433 in. dwt. and uranium 42.8 in. lb. Thus, it would seem that not only can a higher gold grade be

(*Continued on page 9*)

NEW CONSOLIDATED GOLD FIELDS LIMITED

Registered Office: 49 MOORGATE, LONDON, E.C.2.

Mining Companies' Directors' Reports for the Quarter ended 31st December, 1957

All companies mentioned are incorporated in the Union of South Africa unless otherwise stated.

THE SUB NIGEL LIMITED

ISSUED CAPITAL £885,937 IN 1,771,875 SHARES OF 10s. EACH

	Quarter ended 31st December, 1957	Quarter ended 30th September, 1957
OPERATIONS		
Tons milled	199,500	199,500
Total yield in ounces fine	50,462	50,479
Total yield per ton (dwt.)	5.059	5.061
Working Revenue per ton milled	63s. 0d.	63s. 7d.
Working Expenditure per ton milled	54s. 4d.	55s. 2d.
Working Profit per ton milled	8s. 8d.	8s. 5d.
Working Revenue	£628,654	£634,688
Working Expenditure	542,086	550,446
WORKING PROFIT	£86,568	£84,242

NOTE : Working Revenue for the quarter ended 30th September, 1957, does not include an amount of £4,895 received during the quarter in respect of gold sold to the South African Reserve Bank for the period February to July, 1957.

Capital Expenditure	£13,745	£9,703
Taxation	£30,297	£33,287
Pneumoconiosis Refund	Nil	Cr. £8,753
DEVELOPMENT		
Main Reef		
Footage advanced	6,129	6,410
Footage sampled	5,650	6,160
Payable—Feet	1,355	1,415
Per cent	24.0	23.0
Stope width (in.)	36.2	36.6
Stope value (dwt/ton)	11.7	8.0
Inch-dwt.	424	293

DIVIDEND—A dividend No. 90 (Coupon No. 92) of 1s. 6d. per share has been declared, payable on or about 7th February, 1958.

VENTERSPOST GOLD MINING COMPANY LIMITED

ISSUED CAPITAL £2,450,000 IN 4,900,000 SHARES OF 10s. EACH

	Quarter ended 31st December, 1957	Quarter ended 30th September, 1957
OPERATIONS		
Tons milled	361,000	374,000
Total yield in ounces fine	87,560	89,426
Total yield per ton (dwt.)	4.851	4.782
Working Revenue per ton milled	60s. 6d.	60s. 2d.
Working Expenditure per ton milled	51s. 8d.	50s. 5d.
Working Profit per ton milled	8s. 10d.	9s. 9d.
Working Revenue	£1,092,381	£1,124,631
Working Expenditure	932,580	942,745
WORKING PROFIT	£159,801	£181,886

NOTE : Working Revenue for the quarter ended 30th September, 1957, does not include an amount of £8,707 received during the quarter in respect of gold sold to the South African Reserve Bank for the period February to July, 1957.

Capital Expenditure	£39,570	£12,606
Taxation	£26,483	£50,197
DEVELOPMENT		
Main Reef		
Footage sampled	4,885	5,565
Payable—Feet	2,515	3,095
Per cent	51.5	55.6
Stope width (in.)	56.6	61.0
Stope value (dwt./ton)	4.5	5.0
Inch-dwt.	255	305
Contact Reef		
Footage sampled	4,910	4,530
Payable—Feet	3,395	3,005
Per cent	69.1	66.3
Stope width (in.)	55.4	48.7
Stope value (dwt./ton)	11.5	10.8
Inch-dwt.	637	526
Total Development		
Footage advanced	17,485	17,723
Footage sampled	9,795	10,095
Payable—Feet	5,910	6,100
Per cent	60.3	60.4
Stope width (in.)	55.9	54.9
Stope value (dwt./ton)	8.5	7.5
Inch-dwt.	475	412

DIVIDEND—A dividend (No. 36) of 10½d. per share has been declared, payable on or about 7th February, 1958.

SIMMER AND JACK MINES LIMITED

ISSUED CAPITAL £843,750 IN 6,750,000 SHARES OF 2s. 6d. EACH

	Quarter ended 31st December, 1957	Quarter ended 30th September, 1957
OPERATIONS		
Tons milled	286,000	294,000
Total yield in ounces fine	53,888	54,516
Total yield per ton (dwt.)	3.768	3.709
Working Revenue per ton milled	47s. 0d.	46s. 7d.
Working Expenditure per ton milled	43s. 1d.	42s. 7d.
Working Profit per ton milled	3s. 11d.	4s. 0d.
Working Revenue	£671,758	£684,707
Working Expenditure	615,386	625,643
WORKING PROFIT	£56,372	£59,064

NOTE : Working Revenue for the quarter ended 30th September, 1957, does not include an amount of £5,137 received during the quarter in respect of gold sold to the South African Reserve Bank for the period February to July, 1957.

Capital Expenditure	£3,759	Nil
State's Share of Profits :		
For 12 months ended 31st December, 1957 (revised)	£10,482	—
For 9 months ended 30th September, 1957 (revised)	—	£8,090
Taxation :		
For 12 months ended 31st December, 1957 (revised)	£13,178	—
For 9 months ended 30th September, 1957 (revised)	—	£9,946
Pneumoconiosis Refund	Nil	£21,297
DEVELOPMENT		
Main Reef		
Footage sampled	3,070	3,195
Payable—Feet	1,075	1,400
Per cent	35.0	44.8
Stope Width (in.)	49.0	44.8
Stope value (dwt./ton)	5.9	6.2
Inch-dwt.	289	278
Main Reef Leader		
Footage sampled	2,750	2,350
Payable—Feet	1,035	695
Per cent	37.6	29.6
Stope width (in.)	42.2	39.6
Stope value (dwt./ton)	6.2	9.6
Inch-dwt.	262	380
South Reef		
Footage sampled	830	705
Payable—Feet	500	365
Per cent	60.2	51.8
Stope width (in.)	49.6	43.4
Stope value (dwt./ton)	7.8	6.3
Inch-dwt.	387	273
Total Development		
Footage advanced	9,723	8,669
Footage sampled	6,650	6,250
Payable—Feet	2,610	2,490
Per cent	39.2	39.8
Stope width (in.)	46.4	43.1
Stope value (dwt./ton)	6.4	7.1
Inch-dwt.	297	306

ORE RESERVE	Tonnage	Stope Width (in.)	Stope Value (dwt./ton)	Inch-dwt.
At 31st December, 1957	840,000	45.2	4.2	190
At 31st December, 1956	1,060,000	47.4	4.2	199

DIVIDEND—A dividend, No. 51 (Coupon No. 53) of 5d. per share has been declared, payable on or about 7th February, 1958.

FREE STATE SAAIPLAAS GOLD MINING COMPANY LIMITED

ISSUED CAPITAL £6,067,559 IN 12,135,118 SHARES OF 10s. EACH

No. 1 Shaft—The shaft was sunk 829 ft. during the quarter to a total depth of 4,650 ft. Water bearing fissures requiring cementation retarded sinking progress.

No. 2 Shaft—The shaft was sunk a further 1,704 ft. during the quarter to a total depth of 2,737 ft.

Housing—The building of houses in Virginia Township continued during the quarter.

General—General construction work proceeded satisfactorily during the period under review.

WEST WITWATERSRAND AREAS LIMITED

ISSUED CAPITAL £840,840 IN 6,726,720 SHARES OF 2s. 6d. EACH

DRILLING OPERATIONS—Drilling operations during the quarter were confined to Borehole No. E. 10E on the farm Gerhardminnebron No. 4. The borehole was advanced 10 feet to a depth of 503 feet. The formation consisted of cavernous dolomite and progress has been extremely slow on account of the influx of sand and gravel below the water table.

DIVIDEND—A dividend (No. 18) of 1s. 7½d. per share has been declared payable on or about 7th February, 1958.

DOORNFONTEIN GOLD MINING COMPANY LIMITED.

ISSUED CAPITAL £4,914,000 IN 9,828,000 SHARES OF 10s. EACH

PRODUCTION	Quarter ended 31st December, 1957		Quarter ended 30th September, 1957	
Gold				
Tons milled	256,000		256,000	
Total yield in ounces fine	106,922		104,722	
Total yield per ton (dwt.)	8.353		8.181	
Working Revenue per ton milled	104s. 2d.		102s. 9d.	
Working Expenditure per ton milled	60s. 11d.		60s. 1d.	
Working Profit per ton milled	43s. 3d.		42s. 8d.	
Working Revenue		£1,333,276		£1,315,721
Working Expenditure		779,771		769,804
Working Profit		£553,505		£545,917
Uranium Oxide				
Tons treated in leaching plant	116,000		117,000	
Total yield—Uranium oxide lb.	28,032		31,176	
Yield per ton leached—Uranium oxide lb.	0.242		0.266	
Revenue less treatment charges (subject to adjustment)		£48,000		£55,000
TOTAL WORKING PROFIT		£601,505		£600,917

NOTE : Working Revenue for the quarter ended 30th September, 1957, does not include an amount of £9,417 received in respect of gold sold to the South African Reserve Bank for the period February to July, 1957.

Capital Expenditure—		
Gold	£158,368	£148,396
Uranium	2,237	2,466
Total	£160,605	£150,862
Uranium Loan Instalment	£9,900	£9,900
State's Share of Profit	Nil	Nil
Taxation	Nil	Nil

DEVELOPMENT		
Carbon Leader		
Footage advanced	17,830	17,645
Footage sampled	6,940	6,030
Payable—Feet	6,300	5,330
Per cent	90.8	88.4
Stope width (in.)	40.1	40.3
Stope value—Gold (dwt./ton)	10.8	10.6
Inch-dwt. gold	433	427
Stope value—Uranium oxide (lb./ton)	0.23	0.26
Inch-lb. uranium oxide	9.2	10.5

DIVIDEND—A dividend (No. 2) of 1s. per share has been declared, payable on or about 7th February, 1958.

LIBANON GOLD MINING COMPANY LTD.

ISSUED CAPITAL £3,968,650 IN 7,937,300 SHARES OF 10s. EACH

OPERATIONS	Quarter ended 31st December, 1957	Quarter ended 30th September, 1957
Tons milled	309,000	307,000
Total yield in ounces fine	69,067	68,697
Total yield per ton (dwt.)	4.470	4.475
Working Revenue per ton milled	55s. 9d.	56s. 3d.
Working Expenditure per ton milled	45s. 6d.	45s. 9d.
Working Profit per ton milled	10s. 3d.	10s. 6d.
Working Revenue	£861,251	£863,169
Working Expenditure	702,392	702,602
WORKING PROFIT	£158,859	£160,567

NOTE : Working Revenue for the quarter ended 30th September, 1957, does not include an amount of £6,555 received in respect of gold sold to the South African Reserve Bank for the period February to July, 1957.

Capital Expenditure	£127,665	£ 78,736
Taxation	Nil	Nil

DEVELOPMENT		
Main Reef		
Footage sampled	4,155	3,905
Payable—Feet	3,430	2,660
Per cent	82.6	68.1
Stope width (in.)	47.9	50.0
Stope value (dwt./ton)	5.9	5.3
Inch-dwt.	283	265
Contact Reef		
Footage sampled	1,985	1,630
Payable—Feet	890	780
Per cent	44.8	47.9
Stope width (in.)	41.3	43.8
Stope value (dwt./ton)	5.0	9.7
Inch-dwt.	207	425
Total Development		
Footage advanced	14,833	15,480
Footage sampled	6,140	5,535
Payable—Feet	4,320	3,440
Per cent	70.4	62.1
Stope width (in.)	46.5	48.6
Stope value (dwt./ton)	5.7	6.2
Inch-dwt.	265	301

In addition 1,961 ft. of exploratory development was carried out under prospecting permit outside the north-western boundary of the mine, during the quarter ended 31st December, 1957.

HARVIE-WATT SHAFT—The Harvie-Watt Shaft was sunk a distance of 21 ft. during the quarter ended 31st December, 1957, to a total depth of 175 ft.

DIVIDEND—A dividend (No. 14) of 3½d. per share has been declared payable on or about 7th February, 1958.

THE LUIPAARDS VLEI ESTATE AND GOLD MINING COMPANY LIMITED.

(Incorporated in England. Head Office : Johannesburg)

ISSUED CAPITAL £496,911 IN 4,969,105 SHARES OF 2s. EACH

OPERATIONS	Quarter ended 31st December, 1957		Quarter ended 30th September 1957	
Main Reef Section				
Tons milled	217,000		223,000	
Total yield in ounces fine	38,921		39,456	
Yield per ton (dwt.)	3.587		3.539	
Working Revenue per ton milled	44s. 8d.		44s. 7d.	
Working Expenditure per ton milled	43s. 6d.		45s. 2d.	
Working Profit per ton milled	1s. 2d.		Loss 7d.	
Working Revenue		£484,816		£496,792
Working Expenditure		471,978		503,686
Working Profit		£12,838		Loss £6,894
Bird Reef Section				
Tons milled for gold and treated in leaching plant	150,000		149,000	
Total yield—Gold ounces fine	4,712		4,748	
Total yield—Uranium oxide lb.	186,250		194,965	
Yield per ton leached—Uranium oxide lb.	1.242		1.308	
Revenue from gold	£58,730		£59,726	
Revenue from uranium oxide less treatment charges	600,081		609,641	
	£658,811		£669,367	
Working Expenditure excluding uranium treatment charges	388,811		399,367	
Working Profit (subject to adjustment)		270,000		270,000
TOTAL WORKING PROFIT		£282,838		£263,106

NOTES : (1) During July, 1957, operations on the Main Reef Section were seriously affected due to a breakdown of the rock hoisting arrangements at the South Sub-Incline Shaft affecting tonnage hoisted. The resultant cost of repairs increased working costs.

(2) Working Revenue for the quarter ended 30th September, 1957, does not include an amount of £4,505 received in respect of gold sold to the South African Reserve Bank for the period February to July, 1957.

Capital Expenditure—Main Reef	£7,923	£8,867
Bird Reef	£8	£410
Uranium Loan Instalment	£88,500	£88,500
Taxation	£76,127	£75,971

DEVELOPMENT		
Main Reef Section (Gold)		
Main Reef		
Footage sampled	2,210	3,200
Payable—Feet	1,360	1,590
Per cent	61.5	49.7
Stope width (in.)	49.7	46.5
Stope value (dwt./ton)	6.5	5.2
Inch-dwt.	323	242
South Reef		
Footage sampled	2,650	2,350
Payable—Feet	2,400	1,945
Per cent	90.6	82.8
Stope width (in.)	34.0	34.0
Stope value (dwt./ton)	6.1	6.1
Inch-dwt.	207	207
Total Main Reef Section (Gold)		
Footage advanced	9,664	10,104
Footage sampled	4,860	5,550
Payable—Feet	3,760	3,535
Per cent	77.4	63.7
Stope width (in.)	39.7	39.6
Stope value (dwt./ton)	6.3	5.6
Inch-dwt.	250	222
Bird Reef Section (Uranium)		
Total Bird Reef		
Footage advanced	17,489	16,755
Footage sampled	5,185	5,810
Payable—*Feet	2,440	2,350
Per cent	47.1	40.4
Stope width (in.)	36.6	37.0
Gold—Value (dwt./ton)	2.3	1.8
Inch-dwt.	84	67
Uranium Oxide —Value (lb./ton)	3.02	2.30
Inch-lb.	110.5	85.1

* On con bined Uranium Oxide/Gold content.

DIVIDEND—A dividend (No. 55) of 1s. 1d. per share has been declared, payable on or about 7th February, 1958.

WEST DRIEFONTEIN GOLD MINING COMPANY LIMITED

ISSUED CAPITAL £3,520,540 IN 7,041,080 SHARES OF 10s. EACH

PRODUCTION	Quarter ended 31st December, 1957	Quarter ended 30th September, 1957
Gold		
Tons milled	225,000	225,000
Total yield in ounces fine	216,159	215,302
Total yield per ton (dwt.)	19.214	19.138
Working Revenue per ton milled	239s. 8d.	240s. 6d.
Working Expenditure per ton milled	82s. 5d.	82s. 1d.
Working Profit per ton milled	157s. 3d.	158s. 5d.
Working Revenue	£2,696,009	£2,705,372
Working Expenditure	926,822	923,026
Working Profit	£1,769,187	£1,782,346
Uranium Oxide		
Tons treated in leaching plant	141,500	141,500
Total yield—uranium oxide lb.	41,532	38,144
Yield per ton leached—uranium oxide lb.	0.294	0.270
Revenue less treatment charges (subject to adjustment)	£131,000	£128,000
TOTAL WORKING PROFIT	£1,900,187	£1,910,346

NOTE : Working Revenue for the quarter ended 30th September, 1957, does not include an amount of **£20,573** received during the quarter in respect of gold sold to the South African Reserve Bank for the period February to July, 1957.

Capital Expenditure		
Gold	£693,814	£751,313
Uranium	8,040	3,172
Total	£701,854	£754,485
Uranium Loan Instalment	£75,600	£75,600
State's Share of Profit	£163,087	£175,257
Taxation	£491,362	£517,197

No. 5 Shaft—This shaft was sunk a distance of **547** feet to a total depth of **4,878** feet during the quarter ended 31st December, 1957.

DEVELOPMENT		
Carbon Leader		
Footage advanced	14,080	13,955
Footage sampled	4,000	4,225
Payable—Feet	4,000	4,225
Per cent	100.0	100.0
Stope width (in.)	42.6	42.5
Stope value—Gold (dwt./ton)	14.3	16.8
Inch-dwt.—Gold	*609	714
Stope value—Uranium oxide (lb./ton)	0.14	0.19
Inch-lb. – Uranium oxide	6.0	8.1

* NOTE : Development continued to be preponderantly in the area around No. 3 Shaft where, as expected, values are proving to be somewhat below the average.

DIVIDEND—A dividend (No. **10**) of **3s. 6d.** per share has been declared, payable on or about 7th February, 1958.

ROBINSON DEEP LIMITED

ISSUED CAPITAL £750,000 IN 2,000,000 " B " SHARES OF 7s. 6d. EACH

OPERATIONS	Quarter ended 31st December, 1957	Quarter ended 30th September, 1957
Tons milled	227,000	234,000
Total yield in ounces fine	47,971	48,514
Total yield per ton (dwt.)	4.227	4.146
Working Revenue per ton milled	52s. 8d.	52s. 1d.
Working Expenditure per ton milled	50s. 1d.	49s. 0d.
Working Profit per ton milled	2s. 7d.	3s. 1d.
Working Revenue	£597,743	£609,596
Working Expenditure	568,154	573,856
WORKING PROFIT	£29,589	£35,740

NOTE : Working Revenue for the quarter ended 30th September, 1957, does not include an amount of **£4,392** received in respect of gold sold to the South African Reserve Bank for the period February to July, 1957.

Capital Expenditure	£5,800	Cr. £23,075
Taxation	Nil	Nil
Pneumoconiosis Refund	—	Cr. £20,534

DEVELOPMENT		
Main Reef Leader		
Footage sampled	505	800
Payable—Feet	245	415
Per cent	48.5	51.9
Stope width (in.)	49.3	57.2
Stope value (dwt./ton)	6.9	6.5
Inch-dwt.	340	372
South Reef		
Footage sampled	420	395
Payable—Feet	70	140
Per cent	16.7	35.4
Stope width (in.)	53.3	56.8
Stope value (dwt./ton)	3.6	3.9
Inch-dwt.	192	222
Pyritics		
Footage sampled	255	695
Payable—Feet	100	240
Per cent	39.2	34.5
Stope width (in.)	63.3	78.5
Stope value (dwt./ton)	4.7	4.0
Inch-dwt.	298	314
Total Development		
Footage advanced	2,945	3,816
Footage sampled	1,180	1,890
Payable—Feet	415	795
Per cent	35.2	42.1
Stope width (in.)	53.3	63.6
Stope value (dwt./ton)	5.7	5.2
Inch-dwt.	304	331

ORE RESERVE	Tonnage	Stope Width (in.)	Stope Value (dwt./ton)	Inch-dwt.
At 31st December, 1957	1,338,000	54.7	4.5	246
At 31st December, 1956	1,413,000	57.8	4.5	260

DIVIDEND—A dividend, No. **59** (Coupon No. 60), of **9d.** per share has been declared, payable on or about 7th February, 1958.

VOGELSTRUISBULT GOLD MINING AREAS LIMITED

ISSUED CAPITAL £2,514,286 IN 5,028,571 SHARES OF 10s. EACH

PRODUCTION	Quarter ended 31st December, 1957	Quarter ended 30th September, 1957
Gold		
Tons milled	296,000	296,000
Total yield in ounces fine	67,922	67,698
Total yield per ton (dwt.)	4.589	4.574
Working Revenue per ton milled	57s. 5d.	57s. 9d.
Working Expenditure per ton milled	47s. 3d.	47s. 6d.
Working Profit per ton milled	10s. 2d.	10s. 3d.
Working Revenue	£849,737	£854,446
Working Expenditure	699,389	702,601
Working Profit	£150,348	£151,845
Uranium Oxide and Pyrite		
Tons treated in leaching plant	132,100	134,900
Total yield—uranium oxide lb.	56,075	52,147
Yield per ton leached—uranium oxide lb.	0.424	0.387
Total yield—pyrite tons	10,643	10,923
Revenue less treatment charges (subject to adjustment)	*157,980	156,000
TOTAL WORKING PROFIT	£308,328	£307,845

* Includes year end adjustment of **£4,980.**

NOTE : Working Revenue for the quarter ended 30th September, 1957, does not include an amount of **£6,668** received in respect of gold sold to the South African Reserve Bank for the period February to July, 1957.

Capital Expenditure		
Gold	£8,332	Cr.£2,611
Uranium	—	£3,832
Uranium Loan Instalment	£72,000	£72,000
Taxation	£96,979	£96,110

DEVELOPMENT		
Main Reef		
Footage sampled	6,155	5,990
Payable—Feet	1,755	1,560
Per cent	28.5	26.0
Stope width (in.)	39.8	39.5
Stope value (dwt./ton)	5.5	5.5
Inch-dwt.	219	217
Kimberley Reef		
Footage sampled	3,305	3,545
Payable—Feet	950	1,220
Per cent	28.7	34.4
Stope width (in.)	48.7	44.0
Gold : Value (dwt./ton)	6.1	7.3
Inch-dwt.	297	321
Uranium Oxide : Content (lb./ton)	0.34	0.37
Inch-lb.	16.6	16.3
Total Development		
Footage advanced	12,851	13,367
Footage sampled	9,460	9,535
Payable—Feet	2,705	2,780
Per cent	28.6	29.2
Stope width (in.)	42.9	41.5
Gold : Value (dwt./ton)	5.7	6.3
Inch-dwt.	245	261

ORE RESERVE	Classification	Tonnage	Stope Width (in.)	Gold dwt./ton	Gold Inch-dwt.	Uranium Oxide lb./ton	Uranium Oxide In./lb.
At 31.12.57	Main Reef	1,221,000	40.3	5.1	206	—	—
	Kimberley Reef	998,000	43.7	4.8	210	0.51	22.3
Totals and Averages		2,219,000	41.8	5.0	209	—	—
At 31.12.56	Main Reef	1,376,000	40.9	5.3	217	—	—
	Kimberley Reef	1,098,000	42.9	5.1	219	0.54	23.2
Totals and Averages		2,474,000	41.8	5.2	217	—	—

DIVIDEND—A dividend (No. **38**) of **1s. 2d.** per share has been declared, payable on or about 7th February 1958.

RIETFONTEIN CONSOLIDATED MINES LTD.

ISSUED CAPITAL £280,563 IN 1,122,252 SHARES OF 5s. EACH

	Quarter ended 31st December, 1957	Quarter ended 30th September, 1957
OPERATIONS		
Tons milled	71,500	72,000
Total yield in ounces fine	16,889	16,986
Total yield per ton (dwt.)	4.724	4.718
Working Revenue per ton milled	59s. 0d.	59s. 3d.
Working Expenditure per ton milled	45s. 8d.	45s. 7d.
Working Profit per ton milled	13s. 4d.	13s. 8d.
Working Revenue	£210,891	£213,355
Working Expenditure	163,230	164,292
WORKING PROFIT	£47,661	£49,063

NOTE : Working Revenue for the quarter ended 30th September, 1957, does not include an amount of £1,770 received during the quarter in respect of gold sold to the South African Reserve Bank for the period February to July, 1957.

Capital Expenditure	Nil	Nil
Taxation	£17,533	£22,372
DEVELOPMENT		
South Reef		
Footage sampled	275	570
Payable—Feet	200	270
Per cent	72.7	47.4
Stope width (in.)	43.0	43.4
Stope value (dwt./ton)	4.8	6.2
Inch-dwt.	206	269
Main Reef		
Footage sampled	730	570
Payable—Feet	400	520
Per cent	54.8	91.2
Stope width (in.)	47.0	43.7
Stope value (dwt./ton)	10.5	8.1
Inch-dwt.	494	354
North Reef		
Footage sampled	535	540
Payable—Feet	80	—
Per cent	15.0	—
Stope width (in.)	43.4	—
Stope value (dwt./ton)	6.9	—
Inch-dwt.	299	—
Total Development		
Footage advanced	3,635	4,224
Footage sampled	1,540	1,680
Payable—Feet	680	790
Per cent	44.2	47.0
Stope width (in.)	45.4	43.6
Stope value (dwt./ton)	8.5	7.5
Inch-dwt.	386	327

ORE RESERVE	Tonnage	Value (dwt./ton)	Stope Width (in.)	Inch-dwt.
At 31st December, 1957	194,000	5.0	49.1	246
At 31st December, 1956	260,000	5.1	51.5	263

DIVIDEND—A dividend, No. 44, of 1s. 1d. per share has been declared payable on or about 7th February 1958.

VLAKFONTEIN GOLD MINING COMPANY LIMITED

ISSUED CAPITAL £3,000,000 IN 6,000,000 SHARES OF 10s. EACH

	Quarter ended 31st December, 1957	Quarter ended 30th September, 1957
OPERATIONS		
Tons milled	146,000	149,500
Total yield in ounces fine	52,220	53,656
Total yield per ton (dwt.)	7.153	7.178
Working Revenue per ton milled	89s. 0d.	90s. 1d.
Working Expenditure per ton milled	54s. 6d.	55s. 5d.
Working Profit per ton milled	34s. 6d.	34s. 8d.
Working Revenue	£650,065	£673,615
Working Expenditure	398,022	414,694
WORKING PROFIT	£252,043	£258,921

NOTE : Working Revenue for the quarter ended 30th September, 1957, does not include an amount of £5,143 received during the quarter in respect of gold sold to the South African Reserve Bank for the period February to July, 1957.

Capital Expenditure	*£53,429	£5,008
State's Share of Profit	Nil	Nil
Taxation	£107,202	£121,183
DEVELOPMENT		
Main Reef		
Footage advanced	7,451	10,526
Footage sampled	6,640	8,440
Payable—Feet	3,520	3,865
Per cent	53.0	45.8
Stope width (in.)	40.8	40.3
Stope value (dwt./ton)	10.0	9.7
Inch-dwt.	408	391

ORE RESERVE	Tonnage	Stope Width (in.)	Stope Value (dwt./ton)	Inch-dwt.
At 31st December, 1957	1,566,000	40.4	8.1	327
At 31st December, 1956	1,555,000	40.5	8.1	328

DIVIDEND—A dividend (No. 29) of 11d. per share has been declared, payable on or about 7th February, 1958.

*NOTE : Purchase of certain assets from West Vlakfontein Gold Mining Company Limited.

With reference to a Notice to Members published on 28th November, 1956, the Government of the Union of South Africa has now approved of the purchase by this Company of the West Vlakfontein reduced mining lease area in extent 4.3907 morgen (formerly advised as 4.3325 morgen) on which is situated that Company's No. 1 Shaft and certain underground workings.

expected, but also a higher uranium grade when this area is contributing to the mill. Eventually, the mill feed from this area will comprise about 60 per cent of the total monthly tonnage throughput.

Freddies Consolidated, in the "Johnnies" group, reported quite good development results—71 per cent payability, yielding 428 in. dwt. gold and 28.2 in. lb. uranium against 63 per cent payability giving 376 in. dwt. gold and 31.8 in. lb. uranium. In some respects these values can have little meaning in that the declared policy of the company is to use any surplus funds for further exploration of the property.

Hartebeestfontein, in the Anglo-Transvaal Consolidated group, returned values in the final quarter below those of the three preceding months, percentage payability having dropped to 94 per cent from 98 per cent and gold values to 419 in. dwt. from 488 in. dwt. Yet this is a relatively small decline and such small fluctuations are to be expected from one quarter to another. In the case of Virginia, the increase in this company's ore reserves from 1,588,000 tons to 2,086,000 tons is distinctly encouraging when coupled with an improvement in the grade to 5.78 in. dwt. from 5.57 in. dwt. and the fact that the tonnage throughput in 1957 expanded markedly over that put through the mill in 1956.

The December quarterly report from Buffelsfontein was in some respects quite outstanding in that once more the gold grade was up, this time from 570 in. dwt. to 620 in. dwt. with payability at 98 per cent compared with 95 per cent in the September three months. The significance of these figures may be judged if it is noted that development up to June 30, 1957, averaged 460 in. dwt. and gave ore reserve values of 7.45 dwt. The latest figures, therefore may well prove to be the equivalent of approximately 10 dwt. ore reserve grade.

Gold values at Stilfontein dropped sharply in the December quarter and, in fact, were the lowest reported for over two years. Yet the excellent progress made by this mine to-date calls for the comment that one quarter's development

(*Continued on page* 11)

The uranium plant at Hartebeestfontein during construction

GENERAL MINING & FINANCE CORPORATION, LIMITED

(Incorporated in the Union of South Africa)

GOLD MINING COMPANIES' DIRECTORS' REPORTS FOR THE QUARTER ENDED 31st DECEMBER, 1957

All companies mentioned are incorporated in the Union of South Africa

STILFONTEIN GOLD MINING CO. LTD.

Ore milled (tons) **325,000** Output (oz. fine) **158,861**
Yield per ton (dwt.) **9.776**

	£	Per ton milled	Per oz. fine
GOLD			
Working Revenue	1,984,686	122/1.6	249/10.4
Working Cost	885,179	54/5.7	111/5.3
WORKING PROFIT	1,099,507	67/7.9	138/5.1
URANIUM :			
Tons treated		302,600	
Output (lb.)		93,449.0	
Yield per ton (lb.)		0.3088	
Working Profit (subject to adjustment)	229,000		
ACID :			
Working Profit	39,000		
TOTAL WORKING PROFIT	£1,367,507		

CAPITAL EXPENDITURE (excluding Uranium and Acid Plants).. **£844,981**

LOAN REPAYMENTS, CAPITAL AND INTEREST :

Uranium	£130,138	
Acid	£26,084	
Other	£249,723	
		£405,945
		£1,250,926

Capital Expenditure on the Uranium and Acid Plants was **£2,997**
Amortization contributions received from other participants in the Uranium Joint Production Scheme **£60,942**

DEVELOPMENT :

The total footage advanced for the Quarter was **15,518** feet. Of this total **5,653** feet were on reef and **3,900** feet were sampled giving the following results:—

	Footage Payable in terms of Gold content	Per Cent. Payable	Reef Channel Width In.	Gold Av. value dwt./ ton	Gold Av. value in./ dwt.	Uranium Av. value lb./ ton	Uranium Av. value in./ lb.
Vaal Reef	3,510	90.0	4.8	70.6	339	2.36	11.33

SHAFT SINKING.—During December a start was made on the deepening of the Margaret Shaft which was sunk **22** feet to a depth of **3,946** feet.

ORE RESERVES.—The Ore Rreserves, fully developed, at the 31st December, 1957, including only tonnage payable in terms of gold content, were as follows:—

Tons	Average Stope Width	Average Values Gold dwt. per ton	Gold in./dwt.	Uranium lb. per ton	Uranium in./lb.
4,361,000	39.1	9.94	388	0.321	12.55

REDUCTION PLANT.—Satisfactory progress was made with the extensions to the reduction plant and waste washing plant. The latter was commissioned during the Quarter and is functioning satisfactorily.

KOEPE WINDER—MARGARET SHAFT.—Modifications to the headgear are in progress for the housing and installation of the Koepe Winder, which will provide additional hoisting capacity to meet the increased scale of production.

MAIN OFFICES.—Good progress has been made in the construction of the permanent Main Offices.

SURFACE RIGHTS.—The Company has purchased the surface of **1,326** morgen of ground within its mining lease area. Transfer was registered during the Quarter.

DIVIDENDS.—A final Dividend of **1s. 10½d.** per share was declared on 10th December, 1957, payable to shareholders registered on 31st December, 1957, making a total distribution of **2s. 10½d.** per share for the year.

SOUTH ROODEPOORT MAIN REEF AREAS LTD.

Ore milled (tons) **88,000** Gold produced (oz. fine) **20,801**
Recovery per ton (dwt.) **4.73**

WORKING REVENUE AND EXPENDITURE

	£	Per ton milled s. d.	Per oz. fine s. d.
Working Revenue	258,977	58 10	249 0
Working Costs	187,468	42 7	180 3
WORKING PROFIT	71,509	16 3	68 9
Sundry Revenue	3,835		
TOTAL PROFIT	£75,344		

Provision for Taxation **£25,000**
Capital Expenditure **£9,959**

In the Report of the Directors for the year ended 30th June, 1957, it was stated that the increased provision for taxation was partly due to the Commissioner for Inland Revenue having disallowed certain expenditure on exploratory work as a deduction from revenue for tax purposes.

Since the issue of that Report, however, the Commissioner has decided to allow such expenditure as a working cost for the year in which it is incurred, and accordingly refunds of tax for the years ended 30th June, 1956 and 1957 amounting to **£4,065** and **£9,245** respectively have been received.

The tax provision for the Quarter covered by this Report is based on the new procedure, and also takes into account an adjustment of the provision reflected in the Report for the Quarter ended 30th September, 1957.

DEVELOPMENT :

Total Footage	Footage sampled	Footage payable	Percentage payable	Value dwt./ton	Width in.	Inch/ dwt.
7,656	4,110	1,165	28.3	12.8	24	307

The above values represent actual results of sampling, no allowance having been made for any reductions which may be considered necessary when compiling the Ore Reserve.

DIVIDEND.—Interim Dividend **No. 32** of **11½** per cent (equal to **1s 1½d.** per share) was declared, payable to all shareholders registered on 31st December, 1957.

WEST RAND CONSOLIDATED MINES LTD.

WORKING RESULTS	Gold Section	Uranium Section	Total
Ore Milled—tons	388,000	226,000	614,000
Uranium Output—lb.	—	304,537	304,537
Uranium Yield (ounces per ton)	—	21.56	21.56
Uranium Yield (lb. per ton)	—	1.348	1.348
Gold produced—ounces fine	53,500	6,742	60,242
Gold produced—recovery per ton—dwt.	2.758	0.597	1.962
WORKING REVENUE AND EXPENDITURE	£	£	£
Net Profit from Uranium, being Gross Revenue less recovery costs (subject to adjustment)	—	973,000	973,000
Revenue from Gold	666,110	83,929	750,039
TOTAL WORKING REVENUE	666,110	1,056,929	1,723,039
Working Costs (excluding items deducted from Uranium Revenue)	691,696	430,968	1,122,664
WORKING PROFIT/LOSS*	25,586*	625,961	600,375
Sundry Revenue	33,592	291	33,883
TOTAL PROFIT	8,006	626,252	634,258
	s. d.	s. d.	s. d.
Working Revenue per ton milled	34 4	93 2	56 0
Working Costs per ton milled	35 8	38 2	36 7
Working Profit/Loss* per ton milled	1 4*	55 0	19 5
Provision for Taxation			£226,000
CAPITAL EXPENDITURE			
(*a*) Normal (excluding Uranium Plant)			£23,449
(*b*) Uranium Plant			£1,210
TOTAL			£24,659

Sixteenth quarterly instalment towards repayment of Uranium Loan Funds (made up of Capital **£58,283** and Interest **£16,189**) **£74,472**
(Balance of Loan Outstanding at 31st December, 1957, **£1,584,799.**)

DEVELOPMENT.—The total footage advanced during the quarter was **26,091** feet, of which **13,838** feet were accomplished on the Main, Livingstone and Kimberley Reefs Series and **12,253** feet on the Bird Reef Series, giving the following results :—

GOLD SECTION.—Main, Livingstone and Kimberley Reefs Series.

	Footage Payable	Percentage Reef Payable	Channel width—in.	Av. value dwt.	In./ dwt.
Main Reef	2,185	82.3	47.8	7.5	357
South Reef	1,030	82.1	34.9	7.1	249
Livingstone Reef	895	71.6	43.5	6.8	297
Kimberley Reef	—	—	—	—	—
TOTALS	4,110	79.7	43.6	7.3	317

URANIUM SECTION.—Bird Reef Series.

	Footage Payable	Per-centage Payable*	Channel Width Inches	GOLD Value dwt.	Inch/ dwt.	URANIUM Value oz.	lb.	In./ oz.
White Reef	120	66.7	15.6	10.6	166	35.1	2.194	547
Monarch Reef	1,340	74.4	9.5	5.3	50	116.4	7.275	1,103
Upper Monarch Reef—Zone 2	2,905	78.2	30.0	0.5	16	31.1	1.944	932
Upper Monarch Reef—Zone 4	1,400	85.6	35.7	1.0	34	31.7	1.981	1,133
Other Reefs	50	29.4	20.3	0.7	14	22.0	1.375	447
TOTALS	5,815	77.5	26.3	1.2	31	38.4	2.400	1008

*The percentage payable is determined on a combined Uranium/Gold content. The above values represent actual results of sampling, no allowance having been made for any reductions which, subsequently, were considered necessary when compiling the Ore Reserve.

ORE RESERVES.—The fully developed ore reserves re-estimated as at 31st December, 1957, are as follows :—

GOLD SECTION.—Main, South, Livingstone and Kimberley Reefs.

Reef Available	Tons	Stoping Width Inches	Value dwt.
Main Reef	1,898,000	54	4.1
South Reef	937,000	37	2.9
Livingstone Reef	1,179,000	59	2.5
Kimberley Reef	586,000	51	2.6
TOTAL AVAILABLE	4,600,000	50	3.2
Not available	664,000	45	4.5
GRAND TOTAL	5,264,000	50	3.4

URANIUM SECTION.—Bird Reef Series.

Reef Available	Tons	Stoping Width Inches	Gold dwt.	Value Uranium oz.	(lb.)
White Reef	231,000	35	2.5	9.1	(0.569)
Monarch Reef	1,441,000	32	1.0	23.9	(1.494)
Upper Monarch Reef—Zone 2	1,504,000	35	0.3	20.0	(1.250)
Upper Monarch Reef—Zone 4	326,000	43	0.5	21.8	(1.362)
TOTALS	3,502,000	34	0.8	21.0	(1.312)

DIVIDENDS.—The following final dividends were declared for the year 1957, payable to all shareholders registered on 31st December, 1957 :—

Dividend No. 53 of 22½ per cent (equal to **2s. 3d.** per share) on the Ordinary Shares.

Dividend No. 44 of **£6 7s. 6d.** per share on the Deferred Shares.

ELLATON GOLD MINING CO. LTD.

(Incorporated in the Union of South Africa)

Ore milled (tons) 97,000 Gold Recovered (oz.) 21,889

Yield per ton (dwt.) 4.513

	£	Per ton milled	Per oz. fine
GOLD			
Working Revenue	273,374	56/4.4	249/9.4
Working Cost	185,956	38/4.1	169/10.9
WORKING PROFIT	87,418	18/0.3	79/10.5
URANIUM :			
Tons treated		95,522	
Output (lb.)		30,396.0	
Yield per ton (lb.)		0.3182	
Working Profit (subject to adjustment and after deduction of amounts paid in respect of the use of the Stilfontein Plant)	51,000		
TOTAL WORKING PROFIT	£138,418		
CAPITAL EXPENDITURE (excluding Uranium Plant)			£396
RECOUPMENT DURING THE QUARTER			£1,469 Cr.
LOAN REPAYMENTS, CAPITAL AND INTEREST :			
Uranium		£16,112	
Other		£226,217	
			£242,329
			£241,256

Capital Expenditure on the Uranium Plant was Nil.

Amortization contributions received from other participants in the Uranium Joint Pumping Scheme was £12,270

DEVELOPMENT.—The total footage advanced during the Quarter was 4,849 feet. Of this total 2,645 feet were on reef and 2,560 feet were sampled, giving the following results:—

	Footage Payable in terms of Gold content	Per Cent. Payable	Reef Channel Width in.	Gold Av. value dwt./ ton	Gold Av. value in./ dwt.	Uranium Av. value lb./ ton	Uranium Av. value in./ lb.
Vaal Reef	1,460	67.7	21.7	24.1	522	1.536	33.33
Leader Reef	230	56.8	59.5	3.9	230	0.502	29.87
TOTAL	1,690	66.0	26.8	18.0	482	1.226	32.86

BUFFELSFONTEIN GOLD MINING CO. LTD.

Ore milled (tons) 330,000 Gold Recovered (oz.) 107,468

Yield per ton (dwt.) 6.513

	£	Per ton milled	Per oz. fine
GOLD			
Working Revenue	1,341,319	81/3.5	249/7.5
Working Cost	807,495	48/11.3	150/3.3
WORKING PROFIT	533,824	32/4.2	99/4.2
URANIUM :			
Tons treated		310,300	
Output (lb.)		144,728	
Yield per ton (lb.)		0.4664	
Working Profit (subject to adjustment)	387,500		
ACID :			
Working Profit	19,500		
TOTAL WORKING PROFIT	£940,824		
CAPITAL EXPENDITURE (excluding Uranium, Pyrite and Acid Plants)			£475,238
LOAN REPAYMENTS, CAPITAL AND INTEREST :			
Uranium		£85,942	
Acid		—	
Other		£93,793	
			£179,735
			£654,973
Capital Expenditure on th enuraium, pyrite and acid plants			£309,472

DEVELOPMENT.—The total footage advanced during the Quarter was 26,872 feet. Of this total 7,492 feet were on reef and 7,240 feet were sampled giving the following results:—

	Footage Payable in terms of Gold content	Per Cent. Payable	Reef Channel Width In.	Gold Av. value dwt./ ton	Gold Av. value in./ dwt.	Uranium Av. value lb./ ton	Uranium Av. value in./ lb.
Vaal Reef	7,070	97.7	36.4	17.17	625	0.905	32.96

REDUCTION PLANT.—Satisfactory progress was made with the extensions to the Reduction Plant.

URANIUM, PYRITE AND ACID PLANTS.—All sections of the plant operated satisfactorily during the Quarter.

VENTILATION SHAFT.—Work was started on modifications to the Ventilation Shaft which is to be equipped for rock-hoisting purposes. The foundations of a new 5,200 H.P. Winder, which is to be installed, were completed during the Quarter.

DIVIDENDS.—An interim maiden dividend of 15 per cent equal to 1s. 6d. per share was declared on 10th December, 1957, payable to shareholders registered on 31st December, 1957.

can never form a sound basis for judging the mine's prospects.

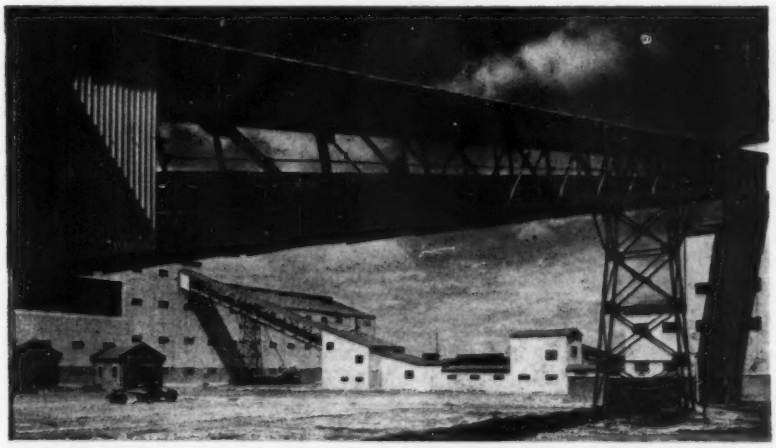
Development results declared by West Driefontein in the Gold Fields group were, for the second successive quarter, rather disappointing. In the December quarter of 1956 the gold grade was 859 in. dwt. This slumped to 752 in. dwt. in the March quarter, but recovered in the September three months to 819 in. dwt. and now, in the last quarter, values have dropped to 609 in. dwt. On the other hand, payability once again hit 100 per cent—a remarkable performance. The lower development values now reported were due to the great weight of development work carried out in the No. 3 shaft area. In any event, the effect on the company's ore reserves will not be as great as one might expect because advancing "longwall stoping" in the richer sections of the mine is automatically bringing in higher grade ore into the reserves. However, these results do put the signpost up that even though the preponderating weight of stoping operations are still being carried out in the richer parts of the mine the effect has yet to be seen on the average grade from balanced stoping operations.

Doornfontein, from the same stable, in the December quarter showed gold grade averaging 433 in. dwt. This is well above the ore reserve average which, at the end of June 30, 1957, was below 300 in. dwt.

In the December quarterly reports from the Anglo American Corporation group, results from Welkom were noticeably better with payability up 8 points to 75 per cent and values more than correspondingly higher at 470 in. dwt. against 384 in. dwt. in September. Welkom's uranium values also improved; advancing to 22.04 in. lb. against 20.57 in. lb. in the preceding three months. The report from Loraine confirmed the declining trend outlined in the company's annual report with payability of only 26 per cent and values averaging 268 in. dwt. Even more disappointing were the results released from the sampling of 385 ft. on the so-called "Rainbow Reef" which gave 42 per cent payability and values averaging 296 in. dwt. President Steyn's report revealed sharply improved uranium values, 54.75 in. lb. compared with 35.28 in. lb. in the September period. Payability and values of President Brand were both noticeably better and from Vaal Reefs came the important announcement that work had begun on expanding the capacity of the reduction plant to 100,000 tons a month. Western Holdings returned lower values—1,169 in. dwt. against 1,439 in. dwt.—but overall payability rose four points to 92 per cent.

Although Free State Geduld's gold values in the No. 1 shaft area fell from 743 in. dwt. in the September quarter to 678 in. dwt., and a similar decline took place in the results obtained from the No. 2 shaft area—1,519 in. dwt. against 1,824 in. dwt. in the September period—a sharp recovery has taken place since the end of the quarter. This was made known on Thursday of this week when Mr. Spiro, speaking at the company's annual meeting in Johannesburg, said that up to January 24 values in the No. 1 shaft were 1,224 in. dwt. obtained from 235 ft. sampled of which 85.1 per cent proved payable, while values at No. 2 shaft obtained from 620 ft. sampled rose to 1,814 in. dwt. with payability at 100 per cent.

Part of the reduction plant at President Steyn



ANGLO-TRANSVAAL CONSOLIDATED INVESTMENT CO. LIMITED

Operating Statistics and Vital Information extracted from the Directors' Reports for Mining Companies associated with the Group for the quarter ended 31st December, 1957.

MIDDLE WITWATERSRAND (WESTERN AREAS) LIMITED.

The following relates to this company's subsidiary :—

NEW KLERKSDORP GOLD ESTATES LIMITED.

PRODUCTION

Gold : Tons milled **33,300**, yielding **3,585** ounces fine, equivalent to **2.153** dwt. per ton.

Uranium : Tons treated (including **31,812** tons from current slimes and **39,645** tons from surface accumulations) **71,457** yielding **24,023** lb. of uranium oxide, equivalent to **0.336** lb. per ton.

FINANCIAL INFORMATION

		Per Ton Milled	
Revenue from gold	£44,737	26s. 10d.	
Working costs	£65,560	39s. 4d.	(365s. 9d. per ounce fine)
Working loss	£20,823	12s. 6d.	
Sundry mining revenue	£1,551	11d.	
Net loss from gold production	£19,272	11s. 7d.	
Estimated profit from uranium production	£38,500		
Total profit for quarter	£19,228		

NOTE : Uranium output and profit are subject to adjustment.

Development expenditure included in working costs : **5s. 6d.** per ton milled.

The following amounts have not been taken into consideration in calculating the profit shown above :—

(*a*) Loans obtained for gold production—Interest	£340
Loan repayment	£24,900
(*b*) Loans obtained for uranium production—Interest	£557
Loan repayment	£1,694
Estimated Taxation in respect of non-mining revenue which accrued during the year ended 31st December, 1957	£100

CAPITAL EXPENDITURE

Gold production	£10,128
Uranium plant	Nil
Total	£10,128

DEVELOPMENT

Footage advanced : **1,329** feet.

Sampling results obtained :—

	Sampled				Payable				
	Footage	Channel width (Ins.)	Inch-dwt. (Gold)	In.-lb. (Uranium Oxide)	Footage	Percentage	Channel width (Ins.)	Inch-dwt. (Gold)	In.-lb. (Uranium Oxide)
Commonage Reef	555	26.6	59	15.4	245	44.1	31.7	99	25.4
Ada May Reef	605	13.8	46	6.4	50	8.3	18.3	132	9.5
Totals and Averages	1,160	20.0	52	10.7	295	25.4	29.4	104	22.7

(The above results are based on actual sampling. No allowance has been made for adjustments necessary in the valuation of the corresponding Ore Reserve.)

ORE RESERVE

The Ore Reserve fully developed as at 31st December, 1957, was estimated as follows :—

	Commonage Reef	Gold Estates Reef	Totals and Averages
Available			
Tons	170,000	4,000	174,000
Value—dwt. per ton (gold)	2.49	2.42	2.49
Value—lb. per ton (uranium oxide)	0.397	0.356	0.396
Estimated stoping width—inches	43.4	46.9	43.4
Shaft and Safety Pillars			
Tons	36,000	22,000	58,000
Value—dwt. per ton (gold)	2.44	2.50	2.46
Value—lb. per ton (uranium oxide)	0.294	0.380	0.327
Estimated stoping width—inches	68.4	68.3	68.4
Total			
Tons	206,000	26,000	232,000
Value—dwt. per ton (gold)	2.48	2.49	2.48
Value—lb. per ton (uranium oxide)	0.379	0.376	0.379
Estimated stoping width—inches	46.3	63.7	47.8

In addition, **1,144,000** tons at **0.411** lb. per ton, contained in slimes dams, were available for treatment for extraction of uranium oxide.

GENERAL

Extensions and additions to the Gold Estates Bantu quarters are in progress.

MERRIESPRUIT (ORANGE FREE STATE) GOLD MINING COMPANY, LIMITED.

FINANCIAL INFORMATION

Capital Expenditure (including **£5,249** on uranium plant), **£73,772.**

DEVELOPMENT

The 28th level haulage, which is being developed by the Virginia mine towards the Merriespruit property, advanced **442** feet during the quarter. In the companion haulage a total of **1,399** feet was developed from several points. In addition, **970** cubic feet were excavated.

EASTERN TRANSVAAL CONSOLIDATED MINES, LIMITED.

PRODUCTION

Tons milled **55,500**, yielding **17,796** ounces fine of gold, equivalent to **6.413** dwt. per ton.

FINANCIAL INFORMATION

Revenue from gold	£221,549	
Working costs	£181,313	
Working profit	£40,236	
Sundry mining revenue	£5,900	
Total profit for quarter	£46,136	
Capital Expenditure		£22,019

DEVELOPMENT

Footage advanced : **8,737.**

SHAFT SINKING AND EQUIPPING

Agnes Gold Mine : The Cesca sub-vertical Shaft was sunk **105** feet to a total depth of **701** feet below the 17th level. 22 level station was excavated.

GENERAL

Power Supply : Installation of a 3,000 KW turbine at the Noordkaap Power Station has been completed and the turbine is being test run.

RAND LEASES (VOGELSTRUISFONTEIN) GOLD MINING COMPANY, LIMITED.

PRODUCTION

Tons milled **510,000** yielding **77,358** ounces fine of gold, equivalent to **3.034** dwt. per ton.

		Per Ton Milled	
Revenue from gold	£965,781	37s. 10d.	
Working costs	£962,550	37s. 9d.	(248s. 10d. per ounce fine)
Working profit	£3,231	1d.	
Sundry mining revenue	£18,400	9d.	
Total profit for quarter	£21,631	10d.	

Development expenditure included in working costs : **3s. 2d.** per ton milled.

Estimated Taxation and Government's share of profits for the half-year ended 31st December, 1957	£2,550
Capital Expenditure	£6,121

Dividend : A Dividend (No. **43**) of **2½** per cent (**3d.** per share) was declared payable to shareholders registered at 31st December, 1957.

DEVELOPMENT

Footage advanced : **14,242.**

Sampling results obtained :—

	SAMPLED			PAYABLE			
	Footage	Channel width (inches)	Inch-dwt.	Footage	Percentage	Channel width (inches)	Inch-dwt.
Main Reef	2,830	42.2	182	1,560	55	34.3	225
Main Reef Leader	2,870	11.4	220	1,620	56	15.6	348
South Reef	160	9.6	350	105	66	9.8	477
Total : Main Reef Series	5,860	26.2	205	3,285	56	24.3	294
Bird Reef	810	46.1	168	390	48	46.1	228
Kimberley Reef	1,890	74.3	193	650	34	76.1	294
Totals and Av'ges	8,560	38.7	199	4,325	51	34.0	288

(The above results are based on actual sampling. No allowance has been made for adjustments necessary in the valuation of the corresponding Ore Reserve.)

VIRGINIA O.F.S. GOLD MINING CO. LTD.

PRODUCTION

Gold : Tons milled **299,000**, yielding **78,367** ounces fine, equivalent to **5.242** dwt. per ton.

Uranium : Tons treated (including **305,277** tons from current slimes and **45,259** tons from surface accumulations) **350,536** yielding **177,445** lb. of uranium oxide, equivalent to **0.506** lb. per ton.

FINANCIAL INFORMATION

		Per Ton Milled	
Revenue from gold	£979,878	65s.	7d.
Working costs	£814,575	54s.	6d. (207s. 11d. per ounce fine)
Working profit	£165,303	11s.	1d.
Sundry mining revenue	£16,037	1s.	1d.
Total working profit from gold production	£181,340	12s.	2d.
Estimated profit from uranium production	£490,025		
Estimated profit from acid production	£75,171		
Total working profit for quarter	£746,536		

NOTE : Uranium output and profit are subject to adjustment.

Development expenditure included in working costs : **8s. 8d.** per ton milled.

The following amounts have not been taken into consideration in calculating the working profit shown above :—

(*a*) Debenture and Loan Stocks, Housing and other loans—interest **£63,705**

(*b*) Loans obtained for Acid and Uranium production :—

Interest **£58,780**

Loan repayment **£143,566**

Taxation and Government's share of profits **Nil**

CAPITAL EXPENDITURE

Gold production (including **£133,583** on excess development), **£540,575** ; uranium and acid plants **£41,621.** Total **£582,196.**

DEVELOPMENT

Footage advanced **17,167.**

Sampling results of development on Basal and Leader Reefs at No. 1 Shaft :—

	Total	Payable
Footage sampled	9,450	3,880 (41.1%)
Channel width—inches	37.8	37.2
Inch-dwt. (gold)	225	396
Inch-lb. (uranium oxide)	20.64	35.92

(The above results are based on actual sampling. No allowance has been made for adjustments necessary in the valuation of the corresponding Ore Reserve.)

ORE RESERVES : The Ore Reserve fully developed as at 31st December, 1957, was estimated as follows :—

	Tons	Value		Stoping width (Inches)
		Gold	Uranium Oxide	
		Dwt./ton	lb./ton	
Available	1,738,000	5.91	0.719	52.5
Unavailable—No. 3 Shaft and No. 1 Shaft and Safety Pillars	348,000	5.10	0.513	53.0
Total and Averages	2,086,000	5.78	0.685	52.6

SHAFT SINKING AND EQUIPPING

No. 2 Shaft : 2,565 feet of equipping were completed. **2,380** cubic feet were excavated in station cutting.

GENERAL

28 Level Haulage was advanced **442** feet during the quarter.

In addition **1,399** feet were developed and **970** cubic feet excavated in the companion haulage in terms of the agreement entered into with Merriespruit Orange Free State) Gold Mining Company Limited.

Pumping : At No. 1 Shaft **259,384** cubic feet were excavated in pump chambers and sumps.

At the end of the quarter the underground pumping capacity was **10,000,000** gallons per day. Additional pumps to increase the capacity to **15,000,000** gallons per day have been installed but will not be commissioned until a second 14 inch pump column has been installed in the shaft. It is anticipated that this pump column will be completed during the quarter ending 31st March, 1958.

VILLAGE MAIN REEF GOLD MINING COMPANY (1934) LIMITED.

PRODUCTION

Tons milled **96,000**, yielding **15,457** ounces fine of gold, equivalent to **3.220** dwt. per ton.

FINANCIAL INFORMATION

		Per Ton Milled	
Revenue from gold	£192,872	40s.	2d.
Working costs	£185,690	38s.	8d. (240s. 3d. per ounce fine)
Working profit	£7,182	1s.	6d.
Sundry mining revenue	£1,440		4d.
Total profit for quarter	£8,622	1s.	10d.

Development expenditure included in working costs : **3s. 8d.** per ton milled.

Estimated taxation for the half year ended 31st December, 1957 **£7,400**

Capital Expenditure **Nil**

Dividend : A dividend (No. 35) of **6¼** per cent (**1d.** per share) was declared payable to shareholders registered at 31st December, 1957.

DEVELOPMENT

Footage advanced **2,723**

Reconditioning footage **2,275**

GENERAL

9th Level Haulage : This haulage has been completed from No. 1 Shaft to Robinson Shaft.

Production was affected by a breakdown of the winder at No. 1 Shaft during October and an underground fire in a neighbouring mine during December. The company is insured against such losses and claims have been lodged with the Insurance Company.

HARTEBEESTFONTEIN GOLD MINING COMPANY, LIMITED.

PRODUCTION

Gold : Tons milled **257,000**, yielding **139,655** ounces fine, equivalent to **10.868** dwt. per ton.

Uranium : Tons treated (including **257,000** tons from current slimes and **43,000** tons from surface accumulations) **300,000** yielding **243,999** lb. of uranium oxide, equivalent to **0.813** lb. per ton.

FINANCIAL INFORMATION

		Per Ton Milled	
Revenue from gold	£1,743,610	135s.	8d.
Working costs	£836,674	65s.	1d. (119s. 10d. per ounce fine)
Working profit	£906,936	70s.	7d.
Sundry mining revenue	£20,200	1s.	7d.
Total working profit from gold production	£927,136	72s.	2d.
Estimated profit from uranium production	£694,958		
Total working profit for quarter	£1,622,094		

NOTE : Uranium output and profit are subject to adjustment.

Development expenditure included in working costs : **13s. 6d.** per ton milled.

The following amounts have not been taken into consideration in calculating the working profit shown above :—

(*a*) Loans obtained for gold production—Interest **£26,808**

(*b*) Loans obtained for uranium production :—

Interest **£24,802**

Loan repayment **£56,710**

Taxation and Government's share of profits **Nil**

CAPITAL EXPENDITURE

Gold production (including **£51,859** on excess development), **£542,824** ; uranium plant construction **£33,573.** Total **£576,397.**

DIVIDEND

A dividend (No. **4**) of **30** per cent (**3s. 0d.** per share) was declared payable to shareholders registered at 31st December, 1957.

DEVELOPMENT

Footage advanced **18,617.**

Sampling results of development on Vaal Reef at No. 1 Shaft :—

	Total	Payable
Footage sampled	9,385	8,820 (94.0%)
Channel width—inches	16.6	16.3
Inch-dwt. (gold)	400	419
Inch-lb. (uranium oxide)	36.16	37.31

(The above results are based on actual sampling. No allowance has been made for adjustments necessary in the valuation of the corresponding Ore Reserve.)

SHAFT SINKING AND EQUIPPING

No. 2 Vertical Shaft.—The installation of the **6,600** h.p. winder is in progress.

No. 2A Sub-vertical Shaft.—The second **2,300** h.p. winder was commissioned during the quarter. The shaft was sunk **1,023** feet to a depth of **1,423**, feet below the collar and was concrete lined to a depth of **1,393** feet, of which **1,001** feet were accomplished during the quarter.

No. 3 Vertical Shaft.—Full-scale sinking was commenced towards the end of October, 1957. The shaft was sunk **821** feet to a depth of **971** feet below the collar and was concrete lined to a depth of **949** feet, of which **804** feet were accomplished during the quarter. The intersection in pilot holes of water-bearing fissures, requiring cementation, delayed sinking operations. A pump station was cut at a depth of **950** feet.

GENERAL

During the quarter operations were adversely affected by a mechanical mishap in No. 2 Shaft. The company is insured against the losses incurred and a claim has been submitted to the insurance company.

Pumping Plant.—The programme to increase the underground pumping and water storage capacities has been completed.

Electric Power Supply.—The extension to the Electricity Supply Commission's sub-station has been completed.

RIEBEECK GOLD MINING COMPANY, LIMITED.

FINANCIAL INFORMATION

Capital Expenditure during the quarter amounted to **£453,667.** The total Capital Expenditure incurred to 31st December, 1957, including preliminary expenses and the acquisition of mineral and surface rights, amounted to **£1,999,525.**

DEVELOPMENT

Footage advanced by Loraine Gold Mines Limited for and on behalf of Riebeeck Gold Mining Company, Limited : **2,394** feet. The return airway and the companion haulage from Loraine Gold Mines, Limited, advanced to **1,893** feet and **1,776** feet, respectively, and intersected several conglomerate bands of the Elsburg and Kimberley Reef series. These bands were sampled but no values of economic importance were obtained.

SHAFT SINKING AND EQUIPPING

No. 1 Shaft was sunk **33** feet to a depth of **121** feet below the collar and was concrete-lined to a depth of **105** feet, of which **17** feet were accomplished during the quarter. The ventilation duct has been completed.

GENERAL

Mine Buildings and Plant : Except for a few minor details, No. 1 Shaft headgear is complete. The installation of the winders has been completed. The installation of a fan and ventilation columns down the ventilation duct has been completed. Work on the change house is in progress.

Non-European Accommodation : Satisfactory arrangements were completed during the quarter to lease from Jeannette Gold Mines, Limited accommodation for this mine's non-European labour force.

Electric Power Supply : The installation of the electrical equipment in the E.S.C. sub-station was completed. Electric power is now being supplied by the Electricity Supply Commission.

Compressed Air Supply : Two **4,000** c.f.m. compressors have been installed and tested. A booster compressor has been installed.

Pre-Cementation : Pre-cementation operations at No. 1 Shaft are being carried out at a depth of **4,194** feet. No fissures were intersected during the quarter.

JOHANNESBURG CONSOLIDATED INVESTMENT COMPANY, LIMITED GROUP

MINING COMPANIES' REPORTS FOR QUARTER ENDED 31st DECEMBER, 1957 WITH COMPARATIVE FIGURES FOR THE PREVIOUS QUARTER.

(All Companies mentioned are incorporated in the Union of South Africa)

GENERAL REMARKS—In determining the payable footage, gold has been taken at 248s. 3d. per ounce fine.

The development values are the actual results of the sampling of development work on reef; no allowance has been made for modifications which may be necessary when computing ore reserves.

THE EAST CHAMP D'OR GOLD MINING COMPANY, LIMITED.

ISSUED CAPITAL £259,875
(Divided into 2,079,000 shares of 2s. 6d. each, fully paid)

	Quarter ended 31st December, 1957	Quarter ended 30th September, 1957
OPERATIONS		
Tons milled	35,000	36,500
Gold—ounces fine	1,165	990
Yield per ton—dwt.	.666	.542
Uranium Oxide—lb.	28,146	29,328
Yield per ton—lb.	.804	.804
Cost per ton milled	55s. 1d.	52s. 11d.
RESULTS OF OPERATIONS		
Revenue from Gold and Sundry Revenue	£16,408	£14,198
Estimated Net Uranium Revenue	*£98,900	*£100,100
	£115,308	£114,298
Less : Working Costs	96,365	96,575
OPERATING PROFIT FOR QUARTER	£18,943	£17,723
Less : Estimated Taxation	5,700	5,200
PROFIT AFTER TAXATION	£13,243	£12,523

*This figure represents estimated net revenue from Uranium, subject to future adjustments, and comprises the estimated value of output less plant operating costs and provision for interest on and repayment of loans raised for the project.

URANIUM LOANS		
Quarterly instalment paid in respect of interest on and redemption of loans raised by this Company	£3,905	£3,905
Balance of Uranium Loans at end of quarter	£95,155	£98,093
DEVELOPMENT		
All on Bird Reef Series		
Development—feet	3,637	3,310
Sampled—feet	2,485	2,050
Payable—feet	*1,815	*1,370
Percentage payable	73	67
Value—gold—dwts.	3.1	1.9
Value—uranium—lb.	2.9	2.0
Width—inches	16	19
Inch-dwt.—gold	50	36
Inch-lb.—uranium	46	38
	At 31st Dec., 1957	At 31st Dec., 1956
ORE RESERVES		
All on Bird Reef Series		
Tons	*167,000	*161,000
Value—gold—dwt.	1.0	0.9
Value—uranium—lb.	1.1	1.0
Width—in.	31	31
Inch-dwt.—gold	31	28
Inch-lb.—uranium	34	31

* Payability is based on the combined gold and uranium content.

GOVERNMENT GOLD MINING AREAS (Modderfontein) CONSOLIDATED, LIMITED.

ISSUED CAPITAL £1,400,000
(Divided into 5,600,000 shares of 5s. each, fully paid)

	Quarter ended 31st December, 1957	Quarter ended 30th September, 1957
OPERATIONS		
Tons Milled	182,000	179,000
Gold—ounces fine	31,052	33,294
Yield per ton—dwt.	3.412	3.720
Cost per ton milled	43s. 6d.	48s. 7d.
RESULTS OF OPERATIONS		
Revenue from Gold and Sundry Revenue	£395,915	£424,498
Less : Working Costs	395,859	434,683
PROFIT ON GOLD MINING	£56	£10,185 (Loss)
Add : Revenue from Pyrite, representing the value of the output less plant operating costs and provision for interest on and repayment of the loans raised for the project	59,219	50,041
Additional revenue accruing from the sale of gold from clean-up operations in that portion of the Reduction Plant not required for the present scale of mining	—	30,679
Net Revenue from sales of salvage	1,014	26,790
Net Revenue from Re-treatment of Accumulated Sands and Slimes	3,406	13,416
OPERATING PROFIT FOR QUARTER	£63,695	£110,741
Less : Estimated Government's Share of Profits and Taxation	9,200	13,600
PROFIT AFTER TAXATION	£54,495	£97,141
CAPITAL EXPENDITURE	—	£15,085
PYRITE LOANS		
Quarterly instalment paid in respect of interest on and redemption of loans raised by this Company	£10,350	£10,350
Balance of Pyrite Loans at end of quarter	£244,307	£252,172
DEVELOPMENT		
Total Development—feet	151	198
Sampled—feet	105	190
Payable—feet	—	—
Percentage payable	—	—

ORE RESERVES

The ore reserves at the end of the year were estimated to amount to 662,000 tons with an average value of 5.7 dwt. over a stoping width of 67 inches.

Corresponding figures as at the 31st December, 1956, were 1,112,000 tons with an average value of 4.9 dwt. over a stoping width of 61 inches.

FREDDIES CONSOLIDATED MINES, LIMITED.

ISSUED CAPITAL £16,359,913
(Divided into 16,359,913 shares of £1 each, fully paid)

	Quarter ended 31st December, 1957	Quarter ended 30th September, 1957
OPERATIONS		
Gold :		
Tons milled	153,000	172,000
Gold—ounces fine	52,971	51,973
Yield per ton—dwt.	6.92	6.04
Cost per ton milled	91s. 9d.	79s. 7d.
Uranium (Joint Production Scheme) :		
Tonnage Entitlement of this Company	153,736	163,702
Lb. apportioned	51,926	53,826
Yield per ton on lb. apportioned	.338	.329
FINANCIAL RESULTS		
Revenue from Gold and Sundry Revenue	£674,850	£666,476
Less : Working Costs	701,883	684,486
LOSS ON GOLD MINING	£27,033	£18,010
Uranium—Estimated Net Revenue from Uranium, subject to future adjustments and representing the revenue less the share of joint pumping, treatment and amortization charges apportioned to this Company from the Joint Production Scheme for the quarter	90,000	88,000
OPERATING PROFIT FOR QUARTER	£62,967	£69,990

Taxation—As the Company has an accumulated loss for tax purposes, it was not necessary to make provision for normal tax for the quarter.

INTEREST PAYABLE

Interest on amounts advanced to the Company by the National Finance Corporation of South Africa and certain Building Societies. (Not taken into account when arriving at the profit for the quarter). £15,599 £15,633

CAPITAL EXPENDITURE		
On Mining Installations	£18,981	£21,293
DEVELOPMENT—		
Total Development—feet	15,404	16,042
Sampled—feet	2,220	2,625
Payable—feet	*1,330	*1,630
Percentage payable	60	62
Value—dwt.	71.3	62.7
Value—lb. uranium	4.7	5.3
Width—in.	6	6
Inch—dwt.	428	376
Inch—lb. Uranium	28.2	31.8
	At 31st Dec. 1957	At 31st Dec., 1956
ORE RESERVES		
Tons	*1,292,000	*1,193,000
Value—Gold—dwt.	5.6	6.0
Value—Uranium—lb.	0.34	0.38
Width—in.	40	40
Inch—dwt.	224	240
Inch—lb.	13.6	15.2

* Payability is based on the combined gold and uranium content.

GENERAL REMARKS

Shares in Free State Geduld Mines, Limited

There were no sales of shares in Free State Geduld Mines, Limited, during the quarter ended 31st December, 1957, and this Company's holdings remained at 68,500 fully paid shares.

THE RANDFONTEIN ESTATES GOLD MINING COMPANY, WITWATERSRAND, LIMITED.

ISSUED CAPITAL £4,063,553
(Divided into 4,063,553 shares of £1 each, fully paid)

	Quarter ended 31st December, 1957	Quarter ended 30th September, 1957
OPERATIONS		
Gold Division		
Tons milled	95,000	155,000
Gold—ounces fine	14,979	25,353
Yield per ton—dwt.	3.153	3.271
Cost per ton milled	36s. 3d.	40s. 4d.
Revenue from Gold and Sundry Revenue	£186,470	£320,948
Less : Working Costs	172,044	312,391
PROFIT	£14,426	£8,557
Uranium Division		
Tons milled	405,000	401,000
Gold—ounces fine	29,039	30,193
Yield per ton—dwt.	1,434	1,506
Uranium oxide—lb.	436,042	412,552
Yield per ton—lb.	1.077	1.029
Cost per ton milled	86s. 8d.	83s. 8d.
Revenue from Gold and Sundry Revenue	£402,741	£402,176
Estimated Net Uranium Revenue	*£1,670,000	*£1,601,000
	£2,072,741	£2,003,176
Less : Working Costs	1,754,648	1,676,698
PROFIT	£318,093	£326,478
RESULTS OF OPERATIONS		
Combined Profit for quarter	£332,519	£335,035
Less: Estimated Taxation	91,000	94,000
PROFIT AFTER TAXATION	£241,519	£241,035

* This figure represents estimated Net Revenue from Uranium and Acid, subject to future adjustments and comprises the estimated value of output less plant operating costs and provision for interest on and repayment of loans raised for the project.

CAPITAL EXPENDITURE ON GOLD DIVISION	£2,644	£6,155
CAPITAL EXPENDITURE ON URANIUM DIVISION	£8,839	£2,655
URANIUM LOANS		
Quarterly instalments paid in respect of interest on and redemption of loans raised by this Company	£209,738	£209,738
Balance of Uranium Loans at end of quarter	£5,110,357	£5,268,186
DEVELOPMENT		
Total Development—feet	34,839	35,399
Gold Division		
Development—feet	108	349
Sampled—feet	30	305
Payable—feet	—	120
Percentage payable	—	39
Value—dwts.	—	6.2
Width—in.	—	26
Inch-dwt.	—	161
Uranium Division—Bird Reef Series		
Development—feet	34,731	35,050
Sampled—feet	5,790	6,025
Payable—feet	*2,530	*2,560
Percentage payable	44	42
Value—gold—dwt.	4.2	4.2
Value—uranium—lb.	2.8	2.9
Width—in.	19	21
Inch-dwt.—gold	80	88
Inch-lb.—uranium	53	61

ORE RESERVES	At 31st Dec., 1957	At 31st Dec., 1956
Gold Division		
Tons	537,000	992,000
Value—dwts.	4.5	3.8
Width—in.	51	54
Inch-dwt.	230	205
Uranium Division		
Tons	*1,550,000	*1,710,000
Value—uranium—lb.	1.2	1.2
Value—gold—dwt.	1.8	1.8
Width—in.	33	33
Inch—lb.	40	40
Inch—dwt.	59	59

* Payability is based on the combined gold and uranium content.

WITWATERSRAND NIGEL LIMITED

(Incorporated in the Union of South Africa)

REPORT OF THE DIRECTORS

for the Quarter ended 31st December, 1957

PRODUCTION

Tons Milled	52,000	
Yield (in oz. fine)	12,649	
Yield per Ton Milled (dwt.)	4.865	
		Per Ton Milled s. d.
Working Revenue	£157,764	60 8
Working Costs	140,893	*54 2
Working Profit	16,871	6 6
Add: Sundry Revenue	1,500	
NET PROFIT	£18,371	

(*222s. 9d. per oz. fine)

In addition an amount of **£2,883** was received in settlement of an insurance claim for loss of profits arising out of a shut-down in October, due to a power failure.

CAPITAL EXPENDITURE

The Capital Expenditure for the Quarter amounted to **£20.**

DEVELOPMENT

Development Footage	4,155 feet
Footage on Reef	2,996 feet
Footage Sampled	2,955 feet

The payable reef disclosures were as follows:
485 feet, or **16.4%**, averaging **21.1** dwt. per ton over a width of **16.9** inches, equivalent to **356** inch-dwt.
(No allowance has been made in the above results for adjustments necessary before calculation of the corresponding Ore Reserve.)

DIVIDEND

After careful consideration it has been decided that, in view of the company's limited cash resources which were depleted to defray the cost of No. 3 Shaft, payment of a dividend should be deferred until June next.

By Order of the Board,
J. F. INCE, London Secretary.

London Office: Finsbury Pavement House,
120, Moorgate, London, E.C.2.
22nd January, 1958.

SPAARWATER GOLD MINING CO., LTD.

(Registered in the Union of South Africa)

REPORT OF THE DIRECTORS

For the Quarter ended 31st December, 1957

Tons Milled		32,000
Total yield in ounces fine		9,810.31
Total yield per ton (dwt.)		6.131
		Per Ton Milled s. d.
Working Revenue	£122,049	76 3
Cost of Mining and Milling	98,095	61 4
Excess of Revenue over cost of Mining and Milling	23,954	14 11
Expenditure on Development	22,839	14 3
Working Profit	1,115	8
Expenditure on Capital Account		£323
Government Taxes		Nil

DEVELOPMENT

The total footage advanced during the quarter amounted to **3,344** feet. The footage sampled amounted to **2,540** feet of which **450** feet, equal to **17.7** per cent, proved payable at an average value of **8.0** dwt. per ton over an estimated stoping width of **36.0** inches, equivalent to **288** inch-dwt.

WESTERN SECTION OF MINE

Development in the Western Section of the mine continued during the quarter. The footage sampled amounted to **2,095** feet of which **390** feet, equal to **18.6** per cent, proved payable at an average value of **8.2** dwt. per ton over an estimated stoping width of **36.0** inches, equivalent to **295** inch-dwt.

43 Int. W.15 Haulage was advanced **261** feet. Reef was intersected towards the end of the quarter but no payable values were disclosed.

Development returns show the actual sampling results: adjustments which may be required when estimating ore reserves have not been applied.

ORE RESERVE

The ore reserve fully developed at 31st December, 1957, based on a pay limit calculated to conform approximately to existing conditions in respect of gold price and working costs is estimated at **267,000** tons averaging **5.9** dwt. per ton over a stoping width of **38.0** inches, equivalent to **224** inch-dwt.

By Order of the Board,
J. F. INCE, London Secretary.

London Office: Finsbury Pavement House,
120, Moorgate, London, E.C.2.
17th January, 1958.

THE CENTRAL MINING—RAND MINES GROUP

South African Mining Companies' Directors' Reports for Quarter ended 31st December, 1957
Office of the London Secretaries: 4 London Wall Buildings, E.C.2

The development values quoted hereunder represent actual results of sampling, no allowance having been made for any adjustments which were or may be necessary when estimating ore reserves at the end of the respective financial years

HARMONY GOLD MINING COMPANY, LIMITED

Ore milled **235,000** tons. Slimes treated for Uranium Oxide **235,567** tons.

GOLD YIELD		URANIUM OXIDE YIELD	
Oz. Fine	Dwt. per ton	Lb.	Lb. per ton
94,332	**8.028**	**117,747**	**0.500**

Operations were adversely affected by the seasonal decrease in labour and by a stoppage of work by European miners on 16th December, 1957.

		Per Ton s. d.
Working Revenue	£1,177,202	100 2
Working Expenditure	722,439	61 6
WORKING PROFIT	**£454,763**	**38 8**

Adjusting for profit from Uranium and Pyrite (subject to adjustment) **£314,800** and sundry revenue (net) **£8,100**, less interest on loan (Dr.) **£7,900**, the Total Profit was **£769,763**.

Taxation, **£300**.

PROFITS FROM URANIUM AND PYRITE—The estimated profit resulting from uranium operations and the production of pyrite will, in future, be published monthly. Although these profits will still be declared subject to adjustment in terms of the price formula, such adjustments are relatively small and it is therefore intended to drop the qualifying phrase "subject to adjustment" in future declarations.

URANIUM AND PYRITE FLOTATION PLANTS LOAN ACCOUNT—Quarterly instalment (Dr.) **£117,800** made up of Capital **£87,000** and Interest **£30,800**.

No allowance has been made for this payment in arriving at the estimated profit from uranium and pyrite shown above.

CAPITAL EXPENDITURE—Capital Expenditure on property, shaft sinking, equipment, etc. (net) amounted to **£468,000**, which includes **£6,900** expended in connection with the uranium and pyrite flotation plants and **£98,400** in connection with the expansion of the gold and uranium plants.

17 LEVEL TWIN HAULAGE SYSTEM—A satisfactory holing was effected with No. 2 Shaft from the ancillary cross cuts from one of the original twin haulages. The first of the twin winzes outside and north of No. 2 Shaft pillar area has reached an incline depth of **768** feet.

UNDERGROUND WATER—The present daily (24 hours) pumping capacity remained at **8,000,000** gallons. Increased capacity will be available in the near future. The average quantity or water pumped per 24 hours for the month of December, 1957, was **3,267,000** gallons and for the quarter **3,182,000** gallons.

PYRITE FLOTATION PLANT—The plant treated **235,067** tons during the quarter with a sulphur extraction of **1.116%**.

NON-EUROPEAN HOSPITAL—The new Non-European hospital was staffed and brought into use.

DEVELOPMENT—No. 2 Shaft Area **3,750** feet (including **3** stations and **554** feet sunk in No. 2 Shaft). Remainder of Mine **9,328** feet. Total **13,078** feet.

PAYABLE DISCLOSURES

Reef	Footage Sampled	Feet	Per Cent.	Gold Channel Value Dwt. per ton	Gold Channel Width, Inches	Uranium Oxide Channel Value, lb./ton
No. 2 Shaft Area—Basal Reef	1,265	1,165	92.1	20.1	39	1.292
Remainder of Mine—Basal Reef	2,035	1,850	90.9	18.7	21	1.378
Totals and Averages	3,300	3,015	91.4	19.4	28	1.329

No. 2 SHAFT—No. 2 Shaft was sunk **554** feet to a depth of **5,154** feet below the collar, concrete lined to a depth of **5,101** feet and equipped to a depth of **4,951** feet.

The "A" reef which was intersected at a depth of **4,566** feet below the collar and sampled at **5** foot intervals around the circumference of the shaft gave average values for gold of **5.77** dwt. and for uranium oxide of **0.569** lb. over a channel width of **75** inches, equivalent to **433** inch-dwt., and **42.85** inch-lb. respectively.

The Leader reef which was intersected at a depth of **5,006** feet below the collar and sampled at **5** feet intervals around the circumference of the shaft gave average values for gold of **2.24** dwt. and for uranium oxide of **0.202** lb. over a channel width of **8.9** inches, equivalent to **20** inch-dwt. and **1.79** inch-lb. respectively.

The Basal Reef which was intersected at a depth of **5,056** feet below the collar and sampled at **5** foot intervals around the circumference of the shaft gave average values for gold of **42.98** dwt. and for uranium of **1,696** lb. over a channel width of **52.3** inches, equivalent to **2,248** inch-dwt. and **88.72** inch-lb. respectively.

The Basal reef was stoped out for a distance of **15** feet around the shaft to facilitate at a later date the removal of the shaft pillar, and the sampling of the face so obtained gave average values for gold of **38.11** dwt. and for uranium oxide of **1.933** lb. over a channel width of **55.8** inches, equivalent to **2,127** inch-dwt. and **107.87** inch-lb. respectively.

11 and **17** Level main stations were excavated and concreted and **21** level station excavated.

BLYVOORUITZICHT GOLD MINING COMPANY, LIMITED

Ore milled **303,000** tons. Slimes treated for Uranium Oxide **477,902** tons

Gold Yield		Uranium Oxide Yield	
Oz. fine	Dwt. per ton	Lb.	Lb. per ton
181,886	**12.006**	**161,804**	**0.339**

		Per Ton s. d.
Working Revenue	£2,270,261	149 10
Working Expenditure	980,363	64 8
WORKING PROFIT	**£1,289,898**	**85 2**

Adjusting for profit from uranium and sulphuric acid (subject to adjustment) **£420,572**, and sundry revenue (net) **£27,700**, the TOTAL PROFIT was **£1,738,170**.

Taxation and Lease Consideration was **£873,700**.

Dividend No. 24 of **1s.** per share declared on December 12, 1957, **£1,200,000**.

PROFITS FROM URANIUM AND SULPHURIC ACID

The estimated profit resulting from uranium operations and the production of sulphuric acid will, in future, be published monthly.

Although these profits will still be declared subject to adjustment in tern s of the price formula such adjustments are relatively small and it is therefore intended to drop the qualifying phrase "subject to adjustment" in future declarations.

URANIUM AND SULPHURIC ACID PLANTS LOAN ACCOUNT.—Quarterly instalment (Dr.) **£147,700**, made up of Capital **£113,600** and Interest **£34,100**.

No allowance has been made for this payment in arriving at the estimated profit from uranium and sulphuric acid shown above.

CAPITAL EXPENDITURE.—Capital expenditure on shaft sinking, equipment, etc., amounted to **£63,000**, which includes **£11,000** expended in connection with the uranium and sulphuric acid plants.

DEVELOPMENT totalled **12,153** feet.

PAYABLE DISCLOSURES

Reef	Footage Sampled	Feet	%	Gold Channel value, dwt./ton	Channel Width In.	Uranium Oxide Channel value lb./ton,
Carbon Leader	4,120	3,560	86.4	93.4	7	3.256

CITY DEEP, LIMITED

Ore milled **445,000** tons. Yield **85,191** ozs. fine. Yield per ton **3.829** dwt.

		Per Ton s. d.
Working Revenue	£1,062,946	47 9
Working Expenditure	1,036,168	46 7
WORKING PROFIT	**£26,778**	**1 2**

Adjusting for Sundry Revenue **£8,400** the TOTAL PROFIT was **£35,178**.

Taxation **£5,400**.

Capital Expenditure on equipment, etc. (Net) **£59,200**.

Dividend No. **73** of **6d.** per share, declared on December 12, 1957, **£50,600**.

Operations at the mine were adversely affected by the fire which broke out in the longwall stoping area at the bottom of K.2 Sub-Incline Shaft on December 7, 1957. The area was sealed off but the fire was not finally extinguished until December 17. It is expected that, by the date of publication of this Report, the re-opening of caved working places will have been completed. The Company is insured against losses of this nature and a claim will be lodged with the Underwriters in due course.

DEVELOPMENT totalled **7,816** feet.

PAYABLE DISCLOSURES

Reef	Footage Sampled	Feet	%	Channel Value Dwt.	Channel Width In.
Pyritic Quartzite Reef	40	—	—	—	—
Main Reef	760	20	2.6	4.7	39
Main Reef Leader	1,560	680	43.6	12.3	29
South Reef	2,170	520	24.0	8.5	33
Kimberley Reef	90	—	—	—	—
Totals and Averages	4,620	1,220	26.4	10.7	30

The **ORE RESERVE** at December 31, 1957, has been re-estimated as follows :—

	Tons	Value Dwt.	Width, In.
Available	3,302,000	5.8	41.4
Not available	713,000	5.9	44.6
TOTAL	4,015,000	5.8	41.9

ROSE DEEP, LIMITED

Ore Milled **163,000** tons. Yield **22,603*** ozs. fine. Yield per ton **2.773** dwt.

		Per Ton s. d.
Working Revenue	£282,093	34 7
Working Expenditure	278,475	34 2
WORKING PROFIT	£3,618	0 5

Adjusting for *additional revenue derived from clean-up operations **£20,000** and sundry revenue **£1,500**, the Total Profit was **£25,118**.
Taxation **£700**.
Capital Expenditure on Property (Dr.) **£200** and Trade Investments (Cr.) **£1,300**.
* In addition to the **22,603** ounces of gold yielded from normal operations during the quarter, **1,608** ounces were derived from clean-up operations during December, 1957, which resulted in additional revenue of **£20,000**.

PAYABLE DISCLOSURES

Reef	Footage Sampled	Feet	%	Channel Value Dwt.	Channel Width In.
Main Reef	230	80	34.8	4.8	61
Composite Reef	70	—	—	—	—
South Reef	140	80	57.1	12.7	18
Totals and Averages	440	160	36.4	5.7	46

The **ORE RESERVE** at 31st December, 1957, has been re-estimated as follows :—

	Tons	Value Dwt.	Width In.
Available	375,000	4.3	53.2
Not Available	48,000	4.3	59.8
TOTAL	423,000	4.3	53.9

EAST RAND PROPRIETARY MINES, LIMITED

Ore milled **666,000** tons. Yield **169,101** oz. fine. Yield per ton **5.075** dwt.

		Per Ton s. d.
Working Revenue	£2,108,955	63 4
Working Expenditure	1,686,391	50 8
WORKING PROFIT	£422,564	12 8

Adjusting for sundry revenue **£13,900** the Total Profit was **£436,464**.
Taxation **£105,600**.
Dividend No. **76** of **2s. 3d.** per share declared on 12th December, 1957, **£445,500**.
Capital Expenditure, on Shaft Sinking and Equipment, etc. (Net) **£111,500**.
DEVELOPMENT totalled **11,911** feet.

PAYABLE DISCLOSURES

Reef	Footage Sampled	Feet	%	Channel Value Dwt.	Channel Width Inches
Main Reef	570	140	24.6	9.1	40
Main Reef Leader	10	—	—	—	—
Composite Reef	1,830	1,310	71.6	12.5	33
South Reef	420	110	26.2	14.3	43
Totals and Averages	2,830	1,560	55.1	12.5	34

The **ORE RESERVE** at 31st December, 1957, has been re-estimated as follows :—

	Tons	Value, Dwt.	Width Inches
Available	3,974,000	6.9	45.0
Not available	1,616,000	5.2	53.5
TOTAL	5,590,000	6.4	47.2

CROWN MINES, LIMITED

Ore milled **686,000** tons. Yield **103,931** oz. fine. Yield per ton **3.030** dwt.

		Per Ton s. d.
Working Revenue	£1,295,760	37 9
Working Expenditure	1,252,368	36 6
WORKING PROFIT	£43,392	1 3

Adjusting for sundry revenue **£19,500**, the Total Profit was **£62,892**.
Taxation **£5,900**.
Dividend No. **113** of **1s. 3d.** per share declared on 12th December, 1957, **£117,900**.
Capital Expenditure on equipment, etc. (net). **£5,900**, Property (Cr.) **£32,900**, Sale of Plant (Cr.) **£6,500**.
DEVELOPMENT totalled **8,510** feet.

PAYABLE DISCLOSURES

Reef	Footage Sampled	Feet	%	Channel Value, Dwt.	Channel Width Inches
Main Reef	3,850	830	21.6	6.5	41
*Main Reef Leader	970	300	30.9	24.8	11
South Reef	660	230	34.8	7.3	33
Kimberley Reef	140	—	—	—	—
Totals and Averages	5,620	1,360	24.2	8.0	33

* NOTE : Includes **100** feet sampled in Shaft Pillar areas, of which **30** feet equal to **30.0** per cent were payable, averaging **60.5** dwt. over a channel width of **6** inches.
The **ORE RESERVE** at 31st December, 1957, has been re-estimated as follows :

	Tons	Value Dwt.	Width Inches
Available	4,365,000	4.7	44.5
Not available	3,234,000	5.0	45.6
Total	7,599,000	4.8	45.0

CONSOLIDATED MAIN REEF MINES AND ESTATE, LIMITED

Ore milled **423,000** tons. Yield **66,381** oz. fine. Yield per ton **3.139** dwt.

		Per Ton s. d
Working Revenue	£827,795	39 2
Working Expenditure	799,777	37 10
WORKING PROFIT	£28,018	1 4

Adjusting for sundry revenue **£1,900**, the TOTAL PROFIT was **£29,918**.
Taxation **£2,500**.
Dividend No. **96** of **1s. 3d.** per share, declared on December 12, 1957, **£78,000**.
DEVELOPMENT totalled **5,613** feet.

PAYABLE DISCLOSURES

Reef	Footage Sampled	Feet	%	Channel Value Dwt.	Channel Width In.
Kimberley Reef	250	120	48.0	4.2	43
Bird Reef	1,040	420	40.4	4.3	42
South Reef	610	240	39.3	10.5	21
Main Reef Leader	980	380	38.8	22.3	12
Main Reef	340	30	8.8	7.2	35
Totals and Averages	3,220	1,190	37.0	7.8	28

DURBAN ROODEPOORT DEEP, LIMITED

Ore milled **545,000** tons. Yield **97,864** oz. fine. Yield per ton **3.591** dwt.

		Per Ton s. d.
Working Revenue	£1,222,696	44 11
Working Expenditure	1,066,397	39 2
WORKING PROFIT	£156,299	5 9

Adjusting for sundry revenue **£11,100** the Total Profit was **£167,399**.
Taxation **£26,500**.
Dividend No. **74** of **1s. 6d.** per share, declared on 12th December, 1957, **£174,400**.
Capital Expenditure on shaft sinking and equipment, etc. (net.) **£16,700**.
DEVELOPMENT totalled **18,675** feet.

PAYABLE DISCLOSURES

Reef	Footage Sampled	Feet	%	Channel Value, Dwt.	Channel Width, Inches
Main Reef	3,050	1,440	47.2	9.3	38
South Reef	590	190	32.2	33.3	12
Kimberley Reef	6,820	4,240	62.2	6.7	54
Totals and Averages	10,460	5,870	56.1	7.5	48

The **ORE RESERVE** at 31st December, 1957, has been re-estimated as follows :

	Tons	Value, Dwt.	Width, Inches
Available	7,760,000	4.0	59.7
Not available	685,000	4.2	63.7
Total	8,445,000	4.0	60.1

MODDERFONTEIN EAST, LIMITED

Ore Milled **403,000** tons. Yield **40,830** ozs. fine. Yield per ton **2.026** dwt.

		Per Ton s. d.
Working Revenue	£511,075	25 4
Working Expenditure	503,962	25 0
WORKING PROFIT	£7,113	0 4

Adjusting for Sundry Revenue, **£4,100**, the Total Profit was **£11,213**.
Taxation and Mineral Lease Consideration **£2,900**.
Dividend No. **61** of **9d.** per share declared on 12th December, 1957, **£34,900**.
DEVELOPMENT totalled **855** feet.

PAYABLE DISCLOSURES

Reef	Footage Sampled	Feet	%	Channel Value Dwt.	Channel Width In.
Main Reef Leader	575	165	28.7	5.8	33

TRANSVAAL GOLD MINING ESTATES

Ore Milled **45,600** tons. Yield **9,100** ozs. fine. Yield per ton **3.991** dwt.

		Per Ton s. d.
Working Revenue	£128,366	56 4
Working Expenditure	121,327	53 3
WORKING PROFIT	£7,039	3 1

Adjusting for S. A. Forest Investments Limited Preference Dividend **£200** and sundry revenue **£600**, *less* expenses at Registered Office and in London **£3,200**, the Net Profit was **£4,639**.
Working Revenue includes an amount of **£37,390** being the proceeds of the sale overseas of copper gold concentrates.
Working Expenditure includes development charges amounting to **£5,514**, equal to **2s. 5d.** per ton milled.
Sales of equipment, etc. (Cr.) **£9,897**.
DEVELOPMENT totalled **1,424** feet. Sampled **1,280** feet.

PAYABLE REEF DISCLOSURES

Feet	Channel Value Dwt.	Channel Width Inches
810	32.2	11

The **ORE RESERVE** at 31st December, 1957, has been re-estimated as follows :—

	Tons	Value Dwt.
Available	53,100	9.4

ANGLO AMERICAN CORPORATION OF SOUTH AFRICA, LIMITED

(Incorporated in the Union of South Africa)

GOLD MINING COMPANIES' DIRECTORS' REPORTS FOR THE QUARTER ENDED 31st DECEMBER, 1957

(All Companies mentioned are incorporated in the Union of South Africa)

DEVELOPMENT VALUES

The development values in all these Companies' Reports represent actual results of sampling, no allowance having been made for adjustments which are necessary in estimating ore reserves.

WELKOM GOLD MINING COMPANY LIMITED

ISSUED CAPITAL (In shares of 5s. each) £3,062,500

	Quarter ended 31st December, 1957	Quarter ended 30th September, 1957
OPERATIONS		
Gold		
Tons milled	241,500	248,000
Ounces fine	72,398	71,241
Yield per ton—dwt.	6.00	5.75
Cost per ounce	197s. 3d.	200s. 4d.
Revenue per ton milled	74s. 10d.	72s. 2d.
Cost per ton milled	59s. 1d.	57s. 7d.
Profit per ton milled	15s. 9d.	14s. 7d.
Uranium (Joint Production Scheme)		
Tonnage entitlement of this Company	222,698	223,186
lb. apportioned	60,578	61,780
Yield per ton on lb. apportioned	.272	.277
WORKING RESULTS		
Gold—Working Revenue	£903,794	£894,467
—Working Costs	713,951	713,526
—Working Profit	189,843	180,941
Uranium—Working Profit (estimated)	166,000	161,985
Total Working Profit	£355,843	£342,926

Interest charges for the quarter (excluding interest on uranium loans) amounted to **£42,703.**

No taxation and no share of profit are as yet payable to the Government.

LOAN REPAYMENTS—		
Debentures		
5% Debentures of a nominal value of **£166,000** were purchased by the Company at a cost of **£158,596.**		
Uranium Loans		
Quarterly instalment comprising redemption and interest	£127,645	£127,645
CAPITAL EXPENDITURE		
Gold	221,436	220,573
Uranium	1,300	235,890
	£222,736	£456,463
Add: Contribution towards capital cost of President Steyn Uranium Plant	23,681	25,414
	246,417	481,877
Less: Recoupments from participants in the Joint Uranium Production Scheme towards the capital cost of the Welkom uranium plant	82,439	82,367
Net Total	£163,978	£399,510
DEVELOPMENT		
Footage driven	16,036	15,319
Sampled		
Feet	3,195	3,550
Average gold value—dwt. per ton	37.12	27.47
Width—inches	9.95	10.30
Equivalent inch-dwt.	369	283
Payable (gold)		
Feet	2,395	2,365
Percentage	75.0	66.6
Average gold value—dwt. per ton	49.38	41.63
Average uranium oxide value—lb. per ton	2.32	2.23
Width—inches	9.52	9.22
Equivalent inch-dwt.	470	384
Equivalent inch-lb.	22.04	20.57

WELKOM GOLD MINING COMPANY LIMITED *Continued*

SHAFT SINKING—No. 1 Shaft : The cutting of **42** level station was completed and the shaft was equipped to this level. Work preparatory to further deepening of the shaft is in hand.

No. 2 Shaft : Work preparatory to the deepening of this shaft was continued.

No. 3 Joint Ventilation Shaft System (for the joint account of this Company, President Brand and President Steyn Gold Mining Companies).

18 ft. Diameter Ventilation Shaft : Work continued on the main ore pass system and the excavations on the **4,350** ft. level.

24 ft. Diameter Shaft : This Shaft was sunk **621** feet to a depth of **4,220** feet below the collar. Stations were cut on the **3,750** and **4,000** levels.

SPRINGS MINES, LIMITED

ISSUED CAPITAL (In shares of 5s. each) £2,527,500

	Quarter ended 31st December, 1957	Quarter ended 30th September, 1957
OPERATIONS		
Gold		
Tons milled	381,000	380,000
Ounces fine	42,930.74	42,187.23
Yield per ton—dwt	2.25	2.22
Cost per ounce	236s. 8d.	240s. 4d.
Revenue per ton milled	28s. 1d.	27s. 11d.
Cost per ton milled	26s. 8d.	26s. 8d.
Profit per ton milled	1s. 5d.	1s. 3d.
WORKING RESULTS		
Working revenue	£535,263	£530,329
Working costs	507,999	506,918
Working Profit	£27,264	£23,411

The estimated working profit for the year ended 31st December, 1957, was **£95,192** (1956—**£125,029**).

TAXATION AND GOVERNMENT'S SHARE OF PROFITS—Estimated liability for the year ended 31st December, 1957—**£20,800.**

CAPITAL EXPENDITURE	Nil	Nil

No capital expenditure was incurred during the year ended 31st December, 1957.

DIVIDEND—Dividend No. **69** of **4½d.** per share was declared payable to members registered in the books of the Company on the 31st December, 1957, and to persons presenting the relevant coupons detached from Share Warrants to Bearer.

DEVELOPMENT		
Total Development—feet	2,097	1,863
Sampled		
Feet	1,890	1,670
Average gold value—dwt. per ton	12.60	16.09
Width—inches	14.16	15.10
Equivalent inch-dwt.	178	243
Payable		
Feet	510	590
Percentage	27.0	35.3
Average gold value—dwt. per ton	35.59	45.65
Width—inches	14.04	12.27
Equivalent inch-dwt.	500	560

ORE RESERVES

1957—Payable gold ore reserve as at the end of 1957 was estimated at **1,965,000** tons of an average value of **4.29** dwt. per ton over a stoping width of **42.52** inches.

1956—Payable gold ore reserve as at the end of 1956 was estimated at **2,176,000** tons of an average value of **4.56** dwt. per ton over a stoping width of **43.89** inches.

WESTERN REEFS EXPLORATION AND DEVELOPMENT COMPANY, LIMITED

ISSUED CAPITAL (In shares of 5s. each) **£1,750,000**

	Quarter ended 31st December, 1957	Quarter ended 30th September, 1957
OPERATIONS		
Gold		
Tons milled	347,000	361,000
Ounces fine	80,429.05	80,453.87
Yield per ton—dwt.	4.64	4.46
Cost per ounce	197s. 4d.	200s. 9d.
Revenue per ton milled	57s. 11d.	56s. 0d.
Cost per ton milled	45s. 9d.	44s. 9d.
Profit per ton milled	12s. 2d.	11s. 3d.
Uranium		
Tons treated	633,473	635,802
Uranium oxide produced—lb.	165,189	165,933
Yield per ton treated—lb.	0.261	0.261
WORKING RESULTS		
Gold—Working revenue	£1,004,423	£1,010,125
—Working costs	793,483	807,694
—Working profit	£210,940	£202,431
Uranium and Sulphuric Acid—		
Working profit (estimated)	£443,000	£464,000
Total Working Profit	£653,940	£666,431

The estimated working profit for the year ended 31st December, 1957, was **£2,624,542** (1956—**£2,325,275**).

TAXATION AND GOVERNMENT'S SHARE OF PROFITS—Estimated liability for the year ended 31st December, 1957—**£947,600.**

URANIUM AND SULPHURIC ACID PLANT LOANS—

Quarterly instalment redemption and interest	£169,182	£169,182

CAPITAL EXPENDITURE £13,257 £13,307

The total net expenditure for the year ended 31st December, 1957, was **£45,234.**

DIVIDEND—Dividend No. 33 of **1s. 3d.** per share was declared payable to members registered in the books of the Company on the 31st December, 1957.

DEVELOPMENT—		
Mining Lease Area		
Total Development—feet	12,575	16,399
Sampled		
Feet	4,190	6,365
Average gold value—dwt. per ton	22.58	17.58
Width—inches	14.82	19.79
Equivalent inch-dwt.	335	348
Payable (gold)		
Feet	2,530	3,650
Percentage	60.4	57.3
Average gold value—dwt. per ton	32.56	36.69
Average uranium oxide value—lb. per ton	2.88	2.85
Width—inches	15.89	15.40
Equivalent inch-dwt.	517	565
Equivalent inch-lb.	45.74	43.86
NOTE : Included in the above figures are the following results on the Vaal Reef Horizon :		
Footage driven	9,043	11,345
Sampled		
Feet	3,155	4,300
Average gold value—dwt. per ton	33.76	37.71
Width—inches	12.41	12.43
Equivalent inch-dwt.	419	469
Payable (gold)		
Feet	2,380	3,405
Percentage	75.4	79.2
Average gold value—dwt. per ton	38.15	43.70
Average uranium oxide value—lb. per ton	3.43	3.51
Width—inches	13.89	13.07
Equivalent inch-dwt.	530	571
Equivalent inch-lb.	47.62	45.82
DEVELOPMENT—Outside Mining Lease area (Farms Goedgenoeg No. 62 and Nooitgedacht No. 53)		
Footage driven	7,019	7,375
Sampled		
Feet	3,640	4,620
Average gold value—dwt. per ton	11.72	8.50
Width—inches	26.09	28.26
Equivalent inch-dwt.	306	240
Payable (gold)		
Feet	1,880	1,930
Percentage	51.6	41.8
Average gold value—dwt. per ton	14.67	12.80
Average uranium oxide value—lb. per ton	0.49	0.38
Width—inches	35.47	36.19
Equivalent inch-dwt.	520	463
Equivalent inch-lb.	17.54	13.60

ORE RESERVES—1957—Payable gold ore reserve as at the end of 1957 was estimated at **4,546,000** tons of an average value of **5.93** dwt. gold per ton and **0.514** lb. uranium oxide per ton over a stoping width of **42.97** inches.

On the Vaal Reef horizon the reserve amounted to **2,063,600** tons having an average value of **8.01** dwt. gold per ton and **0.798** lb. uranium oxide per ton over a stoping width of **37.06** inches. This tonnage is included in the total of **4,546,000** referred to above.

In addition to the foregoing it is estimated that there were approximately **7,929,000** tons of uranium bearing slimes on the slimes dam having an average value of **0.340** lb. uranium oxide per ton.

1956—Payable gold ore reserve as at the end of 1956 was estimated at **4,562,300** tons of an average value of **5.62** dwt. gold per ton and **0.441** lb. uranium oxide per ton over a stoping width of **44.74** inches.

On the Vaal reef horizon the reserve amounted to **1,547,200** tons having an average value of **8.70** dwt. gold per ton and **0.782** lb. uranium oxide per ton over a stoping width of **37.14** inches. This tonnage is included in the total of **4,562,300** referred to above.

In addition to the foregoing it was estimated that there were approximately **9,050,000** tons of uranium bearing slimes on the slimes dam having an average value of **0.340** lb. uranium oxide per ton.

FREE STATE GEDULD MINES, LIMITED

ISSUED CAPITAL (In shares of 5s. each) ..... **£2,199,688 10s. 0d.**

	Quarter ended 31st December, 1957	Quarter ended 30th September, 1957
OPERATIONS		
Tons milled	190,000	187,500
Ounces fine	134,333	130,353
Yield per ton—dwt.	14.14	13.90
Cost per ounce	112s. 2d.	112s. 8d.
Revenue per ton milled	176s. 6d.	174s. 7d.
Cost per ton milled	79s. 4d.	78s. 4d.
Profit per ton milled	97s. 2s.	96s. 3d.
WORKING RESULTS		
Working Revenue	£1,676,621	£1,636,827
Working Costs	753,609	734,218
Working Profit	£923,012	£902,609

Interest charges for the quarter amounted to **£93,042.**

No taxation and no share of profit are as yet payable to the Government.

LOAN REPAYMENTS—An amount of **£439,938** was repaid against the loans of **£1,500,000** advanced to the Company on its formation.

CAPITAL EXPENDITURE		
Total expenditure	£78,888	£119,063
Underground development charged to capital included in the above	£47,000	£57,000
DEVELOPMENT		
Footage driven	23,631	22,832
Sampled		
Feet	3,860	3,390
Average value—dwt. per ton	175.53	196.32
Width—inches	6.17	6.52
Equivalent inch-dwt.	1,083	1,280
Payable		
Feet	3,605	3,330
Percentage	93.4	98.2
Average value—dwt. per ton	185.07	199.54
Width—inches	6.23	6.52
Equivalent inch-dwt.	1,153	1,301
The results obtained in the vicinity of the individual shafts were:—		
NO. 1 SHAFT AREA		
Sampled		
Feet	1,825	1,670
Average value—dwt. per ton	109.34	120.77
Width—inches	5.46	5.97
Equivalent inch-dwt.	597	721
Payable		
Feet	1,570	1,610
Percentage	86.0	96.4
Average value—dwt. per ton	123.95	124.87
Width—inches	5.47	5.95
Equivalent inch-dwt.	678	743
NO. 2 SHAFT AREA		
All samples proved payable.		
Sampled and Payable		
Feet	2,035	1,720
Average value—dwt. per ton	223.05	258.72
Width—inches	6.81	7.05
Equivalent inch-dwt.	1,519	1,824

WESTERN HOLDINGS LIMITED

ISSUED CAPITAL (In shares of 5s. each) **£1,874,094**

	Quarter ended 31st December, 1957	Quarter ended 30th September, 1957
OPERATIONS		
Tons milled	293,000	308,000
Ounces fine	150,267	155,167
Yield per ton—dwt.	10.26	10.08
Cost per ounce	103s. 9d.	103s. 4d.
Revenue per ton milled	128s. 0d.	126s. 6d.
Cost per ton milled	53s. 3d.	52s. 0d.
Profit per ton milled	74s. 9d.	74s. 6d.
WORKING RESULTS		
Working revenue	£1,874,978	£1,948,108
Working costs	779,527	801,393
Working Profit	£1,095,451	£1,146,715

Interest charges for the quarter amounted to **£11,600.**

No taxation and no share of profits are as yet payable to the Government.

CAPITAL EXPENDITURE	£372,870	£369,536
DEVELOPMENT		
Footage driven	18,241	18,814
Sampled		
Feet	3,740	4,500
Average value—dwt. per ton	192.69	197.91
Width—inches	5.61	6.43
Equivalent inch-dwt.	1,081	1,273
Payable		
Feet	3,435	3,955
Percentage	91.8	87.9
Average value—dwt. per ton	209.87	225.25
Width—inches	5.57	6.39
Equivalent inch-dwt.	1,169	1,439

SHAFT SINKING—**No. 3 Circular Shaft System** :—

18 ft. Diameter Ventilation Shaft : Work continued on the excavations for pump chambers, etc., on the **3,700** ft. level and cutting of the conveyor belt crosscut was commenced.

24 ft. Diameter Main Shaft : This shaft was sunk **786** ft. to a depth of **3,448** ft. below the collar. Stations were cut on the **2,650, 2,845, 3,040, 3,235** and **3,430** levels. Erection of the service winder was completed

During November the Basal Reef was intersected in No. 3 Shaft at a depth of **2,945** to **2,958** feet. A complete exposure was obtained and **18** sections were sampled, all of which were payable averaging **262.38** dwt. over **12.44** inches,equivalent to **3,264** inch-dwt. The uranium oxide value was **13.01** inch-lb.

(Continued overleaf)

ANGLO AMERICAN CORPORATION OF SOUTH AFRICA, LIMITED

(Incorporated in the Union of South Africa)

GOLD MINING COMPANIES' DIRECTORS' REPORTS FOR THE QUARTER ENDED 31st DECEMBER, 1957

(All Companies mentioned are incorporated in the Union of South Africa)

DEVELOPMENT VALUES

The development values in all these Companies' Reports represent actual results of sampling, no allowance having been made for adjustments which are necessary in estimating ore reserves.

WELKOM GOLD MINING COMPANY LIMITED

ISSUED CAPITAL (In shares of 5s. each) **£3,062,500**

	Quarter ended 31st December, 1957	Quarter ended 30th September, 1957
OPERATIONS		
Gold		
Tons milled	241,500	248,000
Ounces fine	72,398	71,241
Yield per ton—dwt.	6.00	5.75
Cost per ounce	197s. 3d.	200s. 4d.
Revenue per ton milled	74s. 10d.	72s. 2d.
Cost per ton milled	59s. 1d.	57s. 7d.
Profit per ton milled	15s. 9d.	14s. 7d.
Uranium (Joint Production Scheme)		
Tonnage entitlement of this Company	222,698	223,186
lb. apportioned	60,578	61,780
Yield per ton on lb. apportioned	.272	.277
WORKING RESULTS		
Gold—Working Revenue	£903,794	£894,467
—Working Costs	713,951	713,526
—Working Profit	189,843	180,941
Uranium—Working Profit (estimated)	166,000	161,985
Total Working Profit	£355,843	£342,926

Interest charges for the quarter (excluding interest on uranium loans) amounted to **£42,703.**

No taxation and no share of profit are as yet payable to the Government.

LOAN REPAYMENTS—		
Debentures		
5% Debentures of a nominal value of **£166,000** were purchased by the Company at a cost of **£158,596.**		
Uranium Loans		
Quarterly instalment comprising redemption and interest	£127,645	£127,645
CAPITAL EXPENDITURE		
Gold	221,436	220,573
Uranium	1,300	235,890
	£222,736	£456,463
Add: Contribution towards capital cost of President Steyn Uranium Plant	23,681	25,414
	246,417	481,877
Less: Recoupments from participants in the Joint Uranium Production Scheme towards the capital cost of the Welkom uranium plant	82,439	82,367
Net Total	£163,978	£399,510
DEVELOPMENT		
Footage driven	16,036	15,319
Sampled		
Feet	3,195	3,550
Average gold value—dwt. per ton	37.12	27.47
Width—inches	9.95	10.30
Equivalent inch-dwt.	369	283
Payable (gold)		
Feet	2,395	2,365
Percentage	75.0	66.6
Average gold value—dwt. per ton	49.38	41.63
Average uranium oxide value—lb. per ton	2.32	2.23
Width—inches	9.52	9.22
Equivalent inch-dwt.	470	384
Equivalent inch-lb.	22.04	20.57

WELKOM GOLD MINING COMPANY LIMITED *Continued*

SHAFT SINKING—**No. 1 Shaft** : The cutting of **42** level station was completed and the shaft was equipped to this level. Work preparatory to further deepening of the shaft is in hand.

No. 2 Shaft : Work preparatory to the deepening of this shaft was continued.

No. 3 Joint Ventilation Shaft System (for the joint account of this Company, President Brand and President Steyn Gold Mining Companies).

18 ft. Diameter Ventilation Shaft : Work continued on the main ore pass system and the excavations on the **4,350** ft. level.

24 ft. Diameter Shaft : This Shaft was sunk **621** feet to a depth of **4,220** feet below the collar. Stations were cut on the **3,750** and **4,000** levels.

SPRINGS MINES, LIMITED

ISSUED CAPITAL (In shares of 5s. each) **£2,527,500**

	Quarter ended 31st December, 1957	Quarter ended 30th September, 1957
OPERATIONS		
Gold		
Tons milled	381,000	380,000
Ounces fine	42,930.74	42,187.23
Yield per ton—dwt	2.25	2.22
Cost per ounce	236s. 8d.	240s. 4d.
Revenue per ton milled	28s. 1d.	27s. 11d.
Cost per ton milled	26s. 8d.	26s. 8d.
Profit per ton milled	1s. 5d.	1s. 3d.
WORKING RESULTS		
Working revenue	£535,263	£530,329
Working costs	507,999	506,918
Working Profit	£27,264	£23,411

The estimated working profit for the year ended 31st December, 1957, was £95,192 (1956—**£125,029**).

TAXATION AND GOVERNMENT'S SHARE OF PROFITS—Estimated liability for the year ended 31st December, 1957—**£20,800.**

CAPITAL EXPENDITURE	Nil	Nil

No capital expenditure was incurred during the year ended 31st December, 1957.

DIVIDEND—Dividend No. **69** of **4½d.** per share was declared payable to members registered in the books of the Company on the 31st December, 1957, and to persons presenting the relevant coupons detached from Share Warrants to Bearer.

DEVELOPMENT		
Total Development—feet	2,097	1,863
Sampled		
Feet	1,890	1,670
Average gold value—dwt. per ton	12.60	16.09
Width—inches	14.16	15.10
Equivalent inch-dwt.	178	243
Payable		
Feet	510	590
Percentage	27.0	35.3
Average gold value—dwt. per ton	35.59	45.65
Width—inches	14.04	12.27
Equivalent inch-dwt.	500	560

ORE RESERVES

1957—Payable gold ore reserve as at the end of 1957 was estimated at **1,965,000** tons of an average value of **4.29** dwt. per ton over a stoping width of 42.52 inches.

1956—Payable gold ore reserve as at the end of 1956 was estimated at **2,176,000** tons of an average value of **4.56** dwt. per ton over a stoping width of **43.89** inches.

WESTERN REEFS EXPLORATION AND DEVELOPMENT COMPANY, LIMITED

ISSUED CAPITAL (In shares of 5s. each) **£1,750,000**

	Quarter ended 31st December, 1957	Quarter ended 30th September, 1957
OPERATIONS		
Gold		
Tons milled	347,000	361,000
Ounces fine	80,429.05	80,453.87
Yield per ton—dwt.	4.64	4.46
Cost per ounce	197s. 4d.	200s. 9d.
Revenue per ton milled	57s. 11d.	56s. 0d.
Cost per ton milled	45s. 9d.	44s. 9d.
Profit per ton milled	12s. 2d.	11s. 3d.
Uranium		
Tons treated	633,473	635,802
Uranium oxide produced—lb.	165,189	165,933
Yield per ton treated—lb.	0.261	0.261
WORKING RESULTS		
Gold—Working revenue	£1,004,423	£1,010,125
—Working costs	793,483	807,694
—Working profit	£210,940	£202,431
Uranium and Sulphuric Acid—		
Working profit (estimated)	£443,000	£464,000
Total Working Profit	£653,940	£666,431

The estimated working profit for the year ended 31st December, 1957, was **£2,624,542** (1956—**£2,325,275**).

TAXATION AND GOVERNMENT'S SHARE OF PROFITS—Estimated liability for the year ended 31st December, 1957—**£947,600.**

URANIUM AND SULPHURIC ACID PLANT LOANS—
Quarterly instalment redemption and interest ... £169,182 £169,182

CAPITAL EXPENDITURE £13,257 £13,307
The total net expenditure for the year ended 31st December, 1957, was **£45,234.**

DIVIDEND—Dividend No. 33 of **1s. 3d.** per share was declared payable to members registered in the books of the Company on the 31st December, 1957.

DEVELOPMENT—		
Mining Lease Area		
Total Development—feet	12,575	16,399
Sampled		
Feet	4,190	6,365
Average gold value—dwt. per ton	22.58	17.58
Width—inches	14.82	19.79
Equivalent inch-dwt.	335	348
Payable (gold)		
Feet	2,530	3,650
Percentage	60.4	57.3
Average gold value—dwt. per ton	32.56	36.69
Average uranium oxide value—lb. per ton	2.88	2.85
Width—inches	15.89	15.40
Equivalent inch-dwt.	517	565
Equivalent inch-lb.	45.74	43.86
NOTE : Included in the above figures are the following results on the Vaal Reef Horizon :		
Footage driven	9,043	11,345
Sampled		
Feet	3,155	4,300
Average gold value—dwt. per ton	33.76	37.71
Width—inches	12.41	12.43
Equivalent inch-dwt.	419	469
Payable (gold)		
Feet	2,380	3,405
Percentage	75.4	79.2
Average gold value—dwt. per ton	38.15	43.70
Average uranium oxide value—lb. per ton	3.43	3.51
Width—inches	13.89	13.07
Equivalent inch-dwt.	530	571
Equivalent inch-lb.	47.62	45.82
DEVELOPMENT—Outside Mining Lease area (Farms Goedgenoeg No. 62 and Nooitgedacht No. 53)		
Footage driven	7,019	7,375
Sampled		
Feet	3,640	4,620
Average gold value—dwt. per ton	11.72	8.50
Width—inches	26.09	28.26
Equivalent inch-dwt.	306	240
Payable (gold)		
Feet	1,880	1,930
Percentage	51.6	41.8
Average gold value—dwt. per ton	14.67	12.80
Average uranium oxide value—lb. per ton	0.49	0.38
Width—inches	35.47	36.19
Equivalent inch-dwt.	520	463
Equivalent inch-lb.	17.54	13.60

ORE RESERVES—1957—Payable gold ore reserve as at the end of 1957 was estimated at **4,546,000** tons of an average value of **5.93** dwt. gold per ton and **0.514** lb. uranium oxide per ton over a stoping width of **42.97** inches.

On the Vaal Reef horizon the reserve amounted to **2,063,600** tons having an average value of **8.01** dwt. gold per ton and **0.798** lb. uranium oxide per ton over a stoping width of **37.06** inches. This tonnage is included in the total of **4,546,000** referred to above.

In addition to the foregoing it is estimated that there were approximately **7,929,000** tons of uranium bearing slimes on the slimes dam having an average value of **0.340** lb. uranium oxide per ton.

1956—Payable gold ore reserve as at the end of 1956 was estimated at **4,562,300** tons of an average value of **5.62** dwt. gold per ton and **0.441** lb. uranium oxide per ton over a stoping width of **44.74** inches.

On the Vaal reef horizon the reserve amounted to **1,547,200** tons having an average value of **8.70** dwt. gold per ton and **0.782** lb. uranium oxide per ton over a stoping width of **37.14** inches. This tonnage is included in the total of **4,562,300** referred to above.

In addition to the foregoing it was estimated that there were approximately **9,050,000** tons of uranium bearing slimes on the slimes dam having an average value of **0.340** lb. uranium oxide per ton.

FREE STATE GEDULD MINES, LIMITED

ISSUED CAPITAL (In shares of 5s. each) ..... **£2,199,688 10s. 0d.**

	Quarter ended 31st December, 1957	Quarter ended 30th September, 1957
OPERATIONS		
Tons milled	190,000	187,500
Ounces fine	134,333	130,353
Yield per ton—dwt.	14.14	13.90
Cost per ounce	112s. 2d.	112s. 8d.
Revenue per ton milled	176s. 6d.	174s. 7d.
Cost per ton milled	79s. 4d.	78s. 4d.
Profit per ton milled	97s. 2s.	96s. 3d.
WORKING RESULTS		
Working Revenue	£1,676,621	£1,636,827
Working Costs	753,609	734,218
Working Profit	£923,012	£902,609

Interest charges for the quarter amounted to **£93,042.**
No taxation and no share of profit are as yet payable to the Government.
LOAN REPAYMENTS—An amount of **£439,938** was repaid against the loans of **£1,500,000** advanced to the Company on its formation.

CAPITAL EXPENDITURE		
Total expenditure	£78,888	£119,063
Underground development charged to capital included in the above	£47,000	£57,000
DEVELOPMENT		
Footage driven	23,631	22,832
Sampled		
Feet	3,860	3,390
Average value—dwt. per ton	175.53	196.32
Width—inches	6.17	6.52
Equivalent inch-dwt.	1,083	1,280
Payable		
Feet	3,605	3,330
Percentage	93.4	98.2
Average value—dwt. per ton	185.07	199.54
Width—inches	6.23	6.52
Equivalent inch-dwt.	1,153	1,301
The results obtained in the vicinity of the individual shafts were:—		
NO. 1 SHAFT AREA		
Sampled		
Feet	1,825	1,670
Average value—dwt. per ton	109.34	120.77
Width—inches	5.46	5.97
Equivalent inch-dwt.	597	721
Payable		
Feet	1,570	1,610
Percentage	86.0	96.4
Average value—dwt. per ton	123.95	124.87
Width—inches	5.47	5.95
Equivalent inch-dwt.	678	743
NO. 2 SHAFT AREA		
All samples proved payable.		
Sampled and Payable		
Feet	2,035	1,720
Average value—dwt. per ton	223.05	258.72
Width—inches	6.81	7.05
Equivalent inch-dwt.	1,519	1,824

WESTERN HOLDINGS LIMITED

ISSUED CAPITAL (In shares of 5s. each) **£1,874,094**

	Quarter ended 31st December, 1957	Quarter ended 30th September, 1957
OPERATIONS		
Tons milled	293,000	308,000
Ounces fine	150,267	155,167
Yield per ton—dwt.	10.26	10.08
Cost per ounce	103s. 9d.	103s. 4d.
Revenue per ton milled	128s. 0d.	126s. 6d.
Cost per ton milled	53s. 3d.	52s. 0d.
Profit per ton milled	74s. 9d.	74s. 6d.
WORKING RESULTS		
Working revenue	£1,874,978	£1,948,108
Working costs	779,527	801,393
Working Profit	£1,095,451	£1,146,715

Interest charges for the quarter amounted to **£11,600.**
No taxation and no share of profits are as yet payable to the Government.

CAPITAL EXPENDITURE	£372,870	£369,536
DEVELOPMENT		
Footage driven	18,241	18,814
Sampled		
Feet	3,740	4,500
Average value—dwt. per ton	192.69	197.91
Width—inches	5.61	6.43
Equivalent inch-dwt.	1,081	1,273
Payable		
Feet	3,435	3,955
Percentage	91.8	87.9
Average value—dwt. per ton	209.87	225.25
Width—inches	5.57	6.39
Equivalent inch-dwt.	1,169	1,439

SHAFT SINKING—**No. 3 Circular Shaft System :**—
18 ft. Diameter Ventilation Shaft : Work continued on the excavations for pump chambers, etc., on the **3,700** ft. level and cutting of the conveyor belt crosscut was commenced.
24 ft. Diameter Main Shaft : This shaft was sunk **786** ft. to a depth of **3,448** ft. below the collar. Stations were cut on the **2,650, 2,845, 3,040, 3,235** and **3,430** levels. Erection of the service winder was completed
During November the Basal Reef was intersected in No. 3 Shaft at a depth of **2,945** to **2,958** feet. A complete exposure was obtained and **18** sections were sampled, all of which were payable averaging **262.38** dwt. over **12.44** inches,equivalent to **3,264** inch-dwt. The uranium oxide value was **13.01** inch-lb.

(Continued overleaf)

PRESIDENT STEYN GOLD MINING COMPANY, LIMITED

ISSUED CAPITAL (In shares of 5s. each) **£3,250,000**

	Quarter ended 31st December, 1957	Quarter ended 30th September, 1957
OPERATIONS		
Gold		
Tons milled	277,000	288,000
Ounces fine	105,630	107,602
Yield per ton—dwt.	7.63	7.47
Cost per ounce	141s. 8d.	139. 7d.
Revenue per ton milled	95s. 2d.	93s. 11d.
Cost per ton milled	54s. 0d.	52s. 2d.
Profit per ton milled	41s. 2d.	41s. 9d.
Uranium (Joint Production Scheme)		
Tonnage entitlement of this Company	222,698	223,187
Lb. apportioned	64,461	72,110
Yield per ton on lb. apportioned	.289	.323
WORKING RESULTS		
Gold—Working Revenue	£1,318,570	£1,351,918
—Working Costs	748,199	750,899
—Working Profit	570,371	601,019
Uranium—Working Profit (estimated)	178,000	183,610
Total Working Profit	£748,371	£784,629

Interest charges for the quarter (excluding interest on uranium loans) amounted to **£35,584.**

No taxation and no share of profit are as yet payable to the Government.

URANIUM LOANS		
Quarterly instalment, comprising redemption and interest	£122,887	£122,887
CAPITAL EXPENDITURE		
Gold	£44,172	£143,916
Uranium	4,256	1,138
	£48,428	£145,054
Add: Contributions towards capital cost of Welkom uranium plant	24,616	23,828
	£73,044	£168,882
Less : Recoupments from participants in the Joint Uranium Production Scheme towards the capital cost of the President Steyn uranium plant	79,308	80,573
Net recoupment	£6,264	
Net Total Expenditure		£88,309
DEVELOPMENT		
Footage driven	16,742	20,542
BASAL REEF		
Sampled		
Feet	3,310	3,795
Average gold value—dwt. per ton	39.37	41.44
Width—inches	11.54	12.92
Equivalent inch-dwt.	454	535
Payable (gold)		
Feet	2,945	3,515
Percentage	89.0	92.6
Average gold value — dwt. per ton	43.16	43.92
Average uranium oxide value — lb. per ton	1.36	1.60
Width—inches	11.54	12.97
Equivalent inch-dwt.	498	570
Equivalent—inch-lb.	15.73	20.75
LEADER REEF		
Sampled		
Feet	1,150	2,225
Average gold value—dwt. per ton	1.56	2.23
Width—inches	59.10	50.15
Equivalent inch-dwt.	92	112
Payable (gold)		
Feet	70	235
Percentage	6.1	10.6
Average gold value—dwt. per ton	6.03	5.08
Average uranium oxide value—lb. per ton	0.83	0.64
Width—inches	66.36	55.13
Equivalent inch-dwt.	400	280
Equivalent inch-lb.	54.75	35.28

SHAFT SINKING—**No. 3 Joint Ventilation Shaft System** (for joint account of this company, President Brand and Welkom Gold Mining Companies).

18 ft. Diameter Ventilation Shaft : Work continued on the main ore pass system and the excavations on the **4,350** ft. level.

24 ft. Diameter Shaft : This shaft was sunk **621** ft. to a depth of **4,220** ft. below the collar. Stations were cut on the **3,750** and **4,000** levels.

VAAL REEFS EXPLORATION AND MINING COMPANY, LIMITED

ISSUED CAPITAL (In shares of 5s. each) **£2,500,000**

	Quarter ended 31st December, 1957	Quarter ended 30th September, 1957
OPERATIONS		
Gold		
Tons milled	201,500	199,500
Ounces fine	91,550.67	89,647.56
Yield per ton—dwt.	9.09	8.99
Cost per ounce	130s. 8d.	130s. 6d
Revenue per ton milled	113s. 4d.	112s. 9d.
Cost per ton milled	59s. 5d.	58s. 7d.
Profit per ton milled	53s. 11d.	54s. 2d.

VAAL REEFS EXPLORATION AND MINING COMPANY, LIMITED—*Continued*

Uranium		
Tons treated	207,675	193,508
Uranium oxide produced—lb.	136,996	131,440.5
Yield per ton treated—lb.	0.660	0.679
WORKING RESULTS		
Gold—Working revenue	£1,141,668	£1,124,891
—Working costs	598,191	584,869
—Working profit	£543,477	£540,022
Uranium—Working profit (estimated)	377,000	352,000
Total Working Profit	£920,477	£892,022

The estimated working profit for the year ended 31st December, 1957, was **£3,359,093** (for eight months May/December, 1956—**£1,186,748**).

Interest charges for the year ended 31st December, 1957 (excluding interest on Uranium Loans) amounted to **£70,862** (1956—**£55,057**).

TAXATION AND GOVERNMENT'S SHARE OF PROFITS—No taxation and no share of profits are as yet payable to the Government.

URANIUM PLANT LOANS		
Quarterly instalment, redemption and interest	£70,158	£70,158
CAPITAL EXPENDITURE		
Gold	£174,575	£216,994
Underground development charged to gold capital expenditure and included in the above	(£92,000)	(£95,000)
Uranium	£4,309	£26,391

The total net expenditure for the year ended 31st December, 1957, was **£915,355.**

DIVIDEND—Dividend No. **3** of **2s. 3d.** per share was declared payable to members registered in the books of the Company on the 31st December, 1957.

DEVELOPMENT		
Total development—feet	24,597	25,872
Sampled		
Feet	7,530	7,005
Average gold value—dwt. per ton	61.15	75.04
Width—inches	5.92	5.89
Equivalent inch-dwt.	362	442
Payable (gold)		
Feet	5,240	5,220
Percentage	69.6	74.5
Average gold value—dwt. per ton	85.31	91.98
Average uranium oxide value—lb. per ton	6.93	6.70
Width—inches	5.65	6.11
Equivalent inch-dwt.	482	562
Equivalent inch-lb.	39.16	40.94

ORE RESERVES

1957—Payable gold ore reserve as at the end of 1957 was estimated at **1,813,000** tons of an average value of **10.03** dwt. gold per ton and **0.841** lb. uranium oxide per ton over a stoping width of **39.54** inches.

1956—Payable gold ore reserve as at the end of 1956 was estimated at **1,480,400** tons of an average value of **10.38** dwt. gold per ton and **0.766** lb. uranium oxide per ton over a stoping width of **38.90** inches.

EXTENSION OF GOLD REDUCTION PLANT—Work was commenced on the extension of the Gold Reduction Plant to increase the capacity of that plant to **100,000** tons per month.

BRAKPAN MINES, LIMITED

ISSUED CAPITAL (In shares of 5s. each) **£1,150,000**

	Quarter ended 31st December, 1957	Quarter ended 30th September, 1957
OPERATIONS		
Gold		
Tons milled	382,000	336,000
Ounces fine	56,522.21	55,680.33
Yield per ton—dwt.	2.96	3.31
Cost per ounce	234s. 3d.	236s. 1d.
Revenue per ton milled	36s. 11d.	41s. 7d.
Cost per ton milled	34s. 8d.	39s. 1d.
Profit per ton milled	2s. 3d.	2s. 6d.
WORKING RESULTS		
Working revenue	£705,653	£698,938
Working costs	661,927	657,291
Working Profit	£43,726	£41,647

The estimated working profit for the year ended 31st December, 1957, was **£166,844** (1956—**£165,823**).

TAXATION AND GOVERNMENT'S SHARE OF PROFITS—Estimated liability for the year ended 31st December, 1957—**£19,700.**		
CAPITAL EXPENDITURE	£26,570	£42,888

The total net expenditure for the year ended 31st December, 1957, was **£142,220.**

DIVIDEND—Dividend No. **90** of **4½d.** per share was declared payable to members registered in the books of the Company on the 31st December, 1957, and to persons presenting the relevant coupons detached from Share Warrants to Bearer.

DEVELOPMENT		
Total Development—feet	10,733	11,677
Sampled		
Feet	8,365	8,255
Average gold value—dwt. per ton	4.91	4.40
Width—inches	66.31	63.01
Equivalent inch-dwt.	326	277
Payable		
Feet	2,585	2,205
Percentage	30.9	26.7
Average gold value—dwt. per ton	10.45	11.38
Width—inches	75.82	65.05
Equivalent inch-dwt.	792	740

ORE RESERVES

1957—Payable gold ore reserve as at the end of 1957 was estimated at **2,366,900** tons of an average value of **4.99** dwt. per ton over a stoping width of **50.98** inches.

1956—Payable gold ore reserve as at the end of 1956 was estimated at **2,524,400** tons of an average value of **4.97** dwt. per ton over a stoping width of **47.79** inches.

EAST DAGGAFONTEIN MINES, LIMITED

ISSUED CAPITAL (In shares of 10s. each) £1,865,000

	Quarter ended 31st December, 1957	Quarter ended 30th September, 1957
OPERATIONS		
Gold		
Tons milled	276,000	282,000
Ounces fine	45,985.03	46,864.22
Yield per ton—dwt.	3.33	3.32
Cost per ounce	208s. 6d.	206s. 10d.
Revenue per ton milled	41s. 7d.	41s. 9d.
Cost per ton milled	34s. 9d.	34s. 4d.
Profit per ton milled	6s. 10d.	7s. 5d.
ORKING RESULTS		
Working revenue	£573,688	£589,177
Working costs	479,437	484,659
Working profit	£94,251	£104,518

The estimated working profit for the year ended 31st December, 1957, was £417,221 (1956—£404,171).

TAXATION AND GOVERNMENT'S SHARE OF PROFITS—Estimated liability for the year ended 31st December, 1957—£165,700.

CAPITAL EXPENDITURE	£7,388	£73

The total net expenditure for the year ended 31st December, 1957, was £9,169.

DIVIDEND—Dividend No. 36 of 9d. per share was declared payable to members registered in the books of the Company on the 31st December, 1957.

DEVELOPMENT		
Main Reef Leader :		
Footage driven	1,778	2,634
Sampled		
Feet	1,510	2,395
Average gold value—dwt. per ton	10.89	8.60
Width—inches	9.23	10.41
Equivalent inch-dwt.	101	90
Payable		
Feet	430	515
Percentage	28.5	21.5
Average gold value—dwt. per ton	23.85	20.98
Width—inches	9.19	11.21
Equivalent inch-dwt.	219	235
Kimberley Reef :		
Footage driven	6,104	5,713
Sampled		
Feet	4,155	3,625
Average gold value—dwt. per ton	43.16	28.76
Width—inches	4.78	6.14
Equivalent inch-dwt.	206	177
Payable		
Feet	1,630	1,295
Percentage	39.2	35.7
Average gold value—dwt. per ton	72.00	61.36
Width—inches	6.50	7.00
Equivalent inch-dwt.	468	430

ORE RESERVES

1957—Payable gold ore reserve as at the end of 1957 was estimated at **4,686,000** tons of an average value of **4.41** dwt. per ton over a stoping width of **36.64** inches.

On the Kimberley reef horizon the reserve amounted to **1,657,000** tons having a value of **5.72** dwt. per ton over a stoping width of **36.74** inches. This tonnage is included in the total of **4,686,000** referred to above.

1956—Payable gold ore reserve as at the end of 1956 was estimated at **4,398,000** tons of an average value of **4.49** dwt. per ton over a stoping width of **36.68** inches.

On the Kimberley reef horizon the reserve amounted to **1,421,000** tons having a value of **5.66** dwt. per ton over a stoping width of **36.81** inches. This tonnage is included in the total of **4,398,000** referred to above.

PRESIDENT BRAND GOLD MINING COMPANY, LIMITED

ISSUED CAPITAL (In units of stock of 5s. each) £3,250,000

	Quarter ended 31st December, 1957	Quarter ended 30th September, 1957
OPERATIONS		
Gold		
Tons milled	207,500	208,000
Ounces fine	156,614	156,062
Yield per ton—dwt.	15.10	15.01
Cost per ounce	89s. 9d.	87s. 4d.
Revenue per ton milled	188s. 5d.	188s. 6d.
Cost per ton milled	67s. 9d.	65s. 6d.
Profit per ton milled	120s. 8d.	123s. 0d.
Uranium (Joint Production Scheme)		
Tonnage entitlement of this Company	206,424	208,439
Lb. apportioned	57,768	55,756
Yield per ton on lb. apportioned	.280	.267
WORKING RESULTS		
Gold—Working Revenue	£1,954,436	£1,960,171
—Working Costs	702,582	681,191
—Working Profit	£1,251,854	£1,278,980
Uranium—Working profit (estimated)	134,000	123,503
Total Working Profit	£1,385,854	£1,402,483

Interest charges for the quarter amounted to **£10,145.**

No taxation and no share of profit are as yet payable to the Government.

CAPITAL EXPENDITURE		
Gold		
(including £30,000 in respect of underground development charged to Capital)	£340,667	£569,115

PRESIDENT BRAND GOLD MINING COMPANY, LIMITED *Continued*

Uranium		
Contribution towards capital cost of President Steyn Uranium Plant	21,951	21,669
Contribution towards capital cost of Welkom Uranium Plant	22,817	22,970
Total	£385,435	£613,754
DEVELOPMENT		
Footage driven	16,964	17,985
Sampled		
Feet	3,730	2,620
Average gold value—dwt. per ton	204.19	182.32
Width—inches	5.33	5.03
Equivalent inch-dwt.	1,088	917
Payable (gold)		
Feet	3,450	2,310
Percentage	92.5	88.2
Average gold value—dwt. per ton	217.99	207.77
Average uranium oxide value — lb. per ton	3.60	3.51
Width—inches	5.36	4.95
Equivalent inch-dwt.	1,168	1,028
Equivalent inch-lb.	19.32	17.39

SHAFT SINKING—

No. 2 Ventilation Shaft was sunk **1,262** ft. to a depth of **1,475** ft. below the collar. A pump chamber was cut at **960** ft. below the collar.

No. 2 Sub-Vertical Twin Circular Shafts :

18 ft. Diameter Ventilation Shaft : The cutting of the cross-cuts, pump station and other excavations on the **7,100** ft. level continued.

24 ft. Diameter Shaft: This was sunk **440** ft. to a depth of **562** ft. below **46** level. A transfer station was cut on **47** level.

No. 3 Joint Ventilation Shaft System (for the joint account of this Company, President Steyn and Welkom Gold Mining Companies) :

18 ft. Diameter Ventilation Shaft : Work continued on the main ore pass system and the excavations on the **4,350** ft. level.

24 ft. Diameter Shaft : This shaft was sunk **621** ft. to a depth of **4,220** ft. below the collar. Stations were cut on the **3,750** and **4,000** levels.

THE SOUTH AFRICAN LAND AND EXPLORATION COMPANY, LIMITED

ISSUED CAPITAL (In shares of 3s. 6d. each) £433,125

	Quarter ended 31st December, 1957	Quarter ended 30th September, 1957
OPERATIONS		
Gold		
Tons milled	260,000	274,000
Ounces fine	52,985.96	55,282.13
Yield per ton—dwt.	4.08	4.04
Cost per ounce	191s. 4d.	188s. 0d.
Revenue per ton milled	50s. 10d.	50s. 8d.
Cost per ton milled	39s. 0d.	37s. 11d.
Profit per ton milled	11s. 10d.	12s. 9d.
WORKING RESULTS		
Working revenue	£660,568	£694,012
Working costs	506,922	519,730
Working Profit	£153,646	£174,282

The estimated working profit for the year ended 31st December, 1957, was £739,640 (1956—£812,024).

TAXATION AND GOVERNMENT'S SHARE OF PROFITS—Estimated liability for the year ended 31st December, 1957—£284,000.

CAPITAL EXPENDITURE	£83,196	£61,184

The total net expenditure for the year ended 31st December, 1957, was £179,007.

DIVIDEND—Dividend No. 39 of 1s. 6d. per share was declared payable to members registered in the books of the Company on the 31st December, 1957 and to persons presenting the relevant coupons detached from Share Warrants to Bearer.

DEVELOPMENT		
Mining Lease Area		
Total Development—feet	5,584	5,413
Sampled		
Feet	4,050	3,335
Average gold value—dwt. per ton	9.44	9.04
Width—inches	28.60	22.43
Equivalent inch-dwt.	270	203
Payable		
Feet	1,790	1,180
Percentage	44.2	35.4
Average gold value—dwt. per ton	16.71	20.59
Width—inches	32.60	23.70
Equivalent inch-dwt.	545	488
Outside Mining Lease Area (Withok No. 7)		
Total Development—feet	5,450	4,062
Sampled		
Feet	900	2,930
Average gold value—dwt. per ton	15.71	6.34
Width—inches	18.09	23.00
Equivalent inch-dwt.	284	146
Payable		
Feet	555	935
Percentage	61.7	31.9
Average gold value—dwt. per ton	25.96	13.16
Width—inches	16.09	24.60
Equivalent inch-dwt.	418	324

ORE RESERVES—**1957**—Payable gold ore reserve as at the end of 1957 was estimated at **3,643,100** tons of an average value of **5.64** dwt. per ton over a stoping width of **42.97** inches.

1956—Payable gold ore reserve as at the end of 1956 was estimated at **3,766,100** tons of an average value of **5.83** dwt. per ton over a stoping width of **42.32** inches.

(Continued overleaf)

DAGGAFONTEIN MINES, LIMITED

ISSUED CAPITAL (In shares of 5s. each) £1,750,000

	Quarter ended 31st December, 1957	Quarter ended 30th September, 1957
OPERATIONS		
Gold		
Tons milled	667,000	691,000
Ounces fine	142,345.80	149,272.96
Yield per ton—dwt.	4.27	4.32
Cost per ounce	143s. 10d.	141s. 4d.
Revenue per ton milled	53s. 4d.	54s. 3d.
Cost per ton milled	30s. 8d.	30s. 6d.
Profit per ton milled	22s. 8d.	23s. 9d.
Uranium		
Tons treated	378,739	373,413
Uranium oxide produced — lb.	158,866	139,882
Yield per ton treated — lb.	0.419	0.375
WORKING RESULTS		
Gold—Working revenue	£1,778,586	£1,874,004
—Working costs	1,023,761	1,054,842
Working Profit	£754,825	£819,162
Uranium and Sulphuric Acid—Working profit (estimated)	472,000	423,000
Total Working Profit	£1,226,825	£1,242,162

The estimated working profit for the year ended 31st December, 1957, was **£4,978,123** (1956—**£5,030,033**).

TAXATION AND GOVERNMENT'S SHARE OF PROFITS—Estimated liability for the year ended 31st December, 1957—**£2,661,900.**

URANIUM AND SULPHURIC ACID PLANT LOANS Quarterly instalment, redemption and interest..	£140,776	£140,776
CAPITAL EXPENDITURE ..... The total net expenditure for the year ended 31st December, 1957, was **£59,161.**	£32,557	£8,810

DIVIDEND—Dividend No. **50** of **2s. 9d.** per share was declared payable to members registered in the books of the Company on the 31st December, 1957, and to persons presenting the relevant coupons detached from Share Warrants to Bearer

DEVELOPMENT		
Main Reef Leader :		
Footage driven	1,752	2,143
Sampled		
Feet	1,145	1,775
Average gold value—dwt. per ton	16.24	14.85
Width—inches	10.61	11.24
Equivalent inch-dwt.	172	167
Payable		
Feet	440	815
Percentage	38.4	45.9
Average gold value—dwt. per ton	24.81	26.85
Width—inches	15.16	11.28
Equivalent inch-dwt.	376	303
Kimberley Reef :		
Footage driven	5,101	5,124
Sampled		
Feet	4,790	4,700
Average gold value—dwt. per ton	3.63	1.70
Width—inches	36.02	43.22
Equivalent inch-dwt.	131	73
Payable (gold)		
Feet	1,220	420
Percentage	25.5	8.9
Average gold value—dwt. per ton	9.51	11.67
Average uranium oxide value—lb. per ton	0.47	0.41
Width—inches	37.30	33.07
Equivalent inch-dwt.	355	386
Equivalent inch-lb.	17.52	13.68

ORE RESERVES

1957—Payable gold ore reserve as at the end of 1957 was estimated at **10,246,500** tons of an average value of **5.36** dwt. per ton over a stoping width of **43.10** inches.

On the Kimberley reef horizon the reserve amounted to **4,134,000** tons having a value of **6.22** dwt. gold per ton and **0.422** lb. uranium oxide per ton over a stoping width of **46.79** inches. This tonnage is included in the total of **10,246,500** referred to above.

In addition to the foregoing, it is estimated that there were approximately **2,750,000** tons of uranium bearing slimes on the Kimberley reef slimes dam having an average value of **0.400** lb. uranium oxide per ton.

1956—Payable gold ore reserve as at the end of 1956 was estimated at **11,344,000** tons of an average value of **5.32** dwt. per ton over a stoping width of **43.22** inches.

On the Kimberley reef horizon the reserve amounted to **4,587,500** tons having a value of **6.16** dwt. gold per ton and **0.435** lb. uranium oxide per ton over a stoping width of **46.90** inches. This tonnage is included in the total of **11,344,000** referred to above.

In addition to the foregoing, it was estimated that there were approximately **3,000,000** tons of uranium bearing slimes on the Kimberley reef slimes dam having an average value of **0.400** lb. uranium oxide per ton.

LORAINE GOLD MINES, LIMITED

ISSUED CAPITAL (In shares of 10s. each) £8,226,686

	Quarter ended 31st December, 1957	Quarter ended 30th September, 1957
OPERATIONS		
Gold		
Tons milled	184,000	195,500
Ounces fine	36,144	38,786
Yield per ton—dwt.	3.93	3.97
Cost per ounce	270s. 6d.	259s. 5d.
Revenue per ton milled	49s. 0d.	49s. 10d.
Cost per ton milled	53s. 2d.	51s. 6d.
Loss per ton milled	4s. 2d.	1s. 8d.
Uranium (Joint Production Scheme)		
Tonnage entitlement of this Company	162,954	163,703
Lb. apportioned	38,594	38,829
Yield per ton on lb. apportioned	.237	.237
WORKING RESULTS		
Gold—Working revenue	£450,727	£486,845
—Working costs	488,909	503,141
—Working loss	38,182	16,296
Uranium—Working profit (estimated)	90,000	85,737
Total Working Profit	£51,818	£69,441

Interest charges for the quarter amounted to **£8,199.**

No taxation and no share of profit are as yet payable to the Government.

CAPITAL EXPENDITURE		
Gold (including **£79,000** in respect of underground development charged to capital)	£85,048	£121,575
Uranium		
Contribution towards capital cost of President Steyn Uranium Plant	17,328	16,957
Contribution towards capital cost of Welkom Uranium Plant	18,012	17,983
Total	£120,388	£156,515
DEVELOPMENT		
Footage driven	15,876	19,344
BASAL REEF :		
Sampled		
Feet	2,355	2,560
Average gold value—dwt. per ton	27.08	28.13
Width—inches	4.59	3.77
Equivalent inch-dwt.	124	106
Payable (gold)		
Feet	615	540
Percentage	26.1	21.1
Average gold value — dwt. per ton	48.28	49.46
Average uranium oxide value—lb. per ton	3.05	3.46
Width—inches	5.55	5.11
Equivalent inch-dwt.	268	253
Equivalent inch-lb.	16.92	17.69
" B " REEF :		
Sampled		
Feet	3,220	5,220
Average gold value—dwt. per ton	5.65	7.52
Width—inches	22.74	24.06
Equivalent inch-dwt.	128	181
Payable (gold)		
Feet	630	1,535
Percentage	19.6	29.4
Average gold value—dwt. per ton	16.64	18.06
Average uranium oxide value—lb. per ton	0.77	0.70
Width—inches	27.96	27.56
Equivalent inch-dwt.	465	498
Equivalent inch-lb.	21.57	19.39
RAINBOW REEF :		
Sampled		
Feet	385	835
Average gold value—dwt. per ton	4.73	3.72
Width—inches	39.43	39.80
Equivalent inch-dwt.	187	148
Payable (gold)		
Feet	160	365
Percentage	41.6	43.7
Average gold value—dwt. per ton	6.18	7.35
Average uranium oxide value—lb. per ton	0.47	0.46
Width—inches	47.97	39.01
Equivalent inch-dwt.	296	287
Equivalent inch-lb.	22.67	17.97
OTHER REEFS :		
Sampled		
Feet	170	1,830
Average gold value—dwt. per ton	2.04	1.96
Width—inches	46.59	50.22
Equivalent inch-dwt.	95	98
Payable (gold)		
Feet	10	90
Percentage	5.9	4.9
Average gold value—dwt. per ton	5.80	5.53
Average uranium oxide value—lb. per ton	0.84	0.57
Width—inches	84.00	52.11
Equivalent inch-dwt.	487	288
Equivalent inch-lb.	70.81	29.70

London Office :
40 Holborn Viaduct, E.C.1.
16th January, 1958.

For and on behalf of
ANGLO AMERICAN CORPORATION OF SOUTH AFRICA LIMITED.
W. C. SQUIRE, Joint London Secretary.

Reef Sorting on South African Gold Mines

The economies from reef sorting on South African gold mines have come to be much more widely appreciated in recent years. We reproduce here extended extracts from an article appearing in the forthcoming issue of *The Mining Journal Quarterly Review of South African Gold Shares* which discusses current Rand and O.F.S. practice in some detail and explains the consequential effect on mill grade and on costs.

IF gold and uranium were to occur evenly distributed throughout reefs of width equal to, or greater than, the minimum feasible stoping width (which is about 27 in.), the question of sorting would not arise, since if these conditions were to prevail it would be possible to extract and treat payable ore only and to leave the barren rock intact.

These convenient conditions, however, are seldom encountered on South African gold mines. Very few of the reefs mined in South Africa are of a sufficient width to sustain normal extraction operations exclusively between their hanging-wall and footwall contacts; and it is also unfortunately true that neither gold nor uranium are ever evenly distributed over a section of reef.

It has also been found true, particularly in the case of reefs which carry varying amounts of the so-called "carbon" along their footwall contacts, as do the Basal, Vaal and Carbon Leader reefs, that the gold content almost invariably tends to concentrate towards the base of, or on the footwall contact of, the reef. Further, in all uraniferous reefs the distribution of uranium is sympathetic with the distribution of gold.

Consequently, it is always necessary to blast out both reef and waste in the stopes.

The amount of waste broken with the reef in any stope depends upon the extraction methods applied in the working of the particular reef. These in turn are dictated by the formation and nature of the reef itself, and of the strata occurring above and below it.

In certain cases the proportion of waste stoped out may necessarily be high. This is particularly true of reefs which are overlain by a band of shale. The Basal reef is an outstanding example. Here, when the quartzite intervening between the reef and the shale becomes too thin to sustain the weight of the shale, it is necessary to include the latter in the stope face, however thick it may be.

Waste sorting is currently being applied to varying degrees on a large number of South African gold mines; and in recent years several of the newer mines in the Klerksdorp area and on the West Wits. Line, on account of the nature of their reefs, have adopted the practice of reef picking, which, as the name implies, involves the picking of reef from the stope products hoisted to surface. Nevertheless, whether a mine elects to sort out waste or reef on surface, a certain proportion of the waste mined is usually discarded underground.

Problems of Sorting Underground

Apart from considerations of cost, the separation of reef and waste in the stopes to a satisfactory degree is not possible for a number of practical reasons. Underground conditions do not encourage accurate sorting. The lighting in stopes is unsuitable and inadequate; time is not available for a thorough sorting of all broken rock between blasts; broken ore, even when wetted down, has a covering of dirt which prohibits a satisfactory assessment of the nature of individual pieces of rock; and it is not feasible to train all underground labour in sorting procedure to the degree of proficiency which would be necessary if anything approaching the complete separation of reef from waste in the stopes were to be aimed at.

The economics of underground sorting explains and emphasizes the desirability of eliminating waste from the ore as soon after it is broken as possible. Direct breaking costs are not directly influenced by sorting (although sorting has the effect of increasing the reef-treating capacity of the reduction plant), since it is unusual for a mine to modify its breaking practice—the number of holes to a bench, the spacing of the benches, and the depth and direction of the holes—for the sole purpose of facilitating sorting, either on surface or in the stopes. On the other hand, if sorting and waste packing is applied to any degree, the cost of timber and of its transportation to the stopes can be cut to a proportionate degree. The cost of transporting and hoisting valueless rock can also be avoided; and a further advantage of underground sorting is that as the quantity of waste to be hoisted up any shaft decreases the reef hoisting capacity of that shaft increases.

Again on the subject of costs: if sorting is to be applied on any scale, the complement of underground labour has to be increased, with a corresponding increase in labour costs. This disadvantage is, however, nullified on many mines by constituting special gangs, which are employed not only on the sorting and packing of waste, but also on sweeping and fines recovery. The increased labour costs are thus partially offset by an increased gold recovery.

The extent to which underground sorting can be applied is therefore strictly limited.

Methods of Surface Sorting

When a mine decides to introduce surface sorting, it must also be decided whether to install a plant equipped for the removal of waste from the ore passing over the sorting belts, or a plant in which reef is to be picked out of the ore. This decision will be influenced by a number of factors concerning the nature of reef and of the rock bounding it.

Reef picking can only be applied when the reef being worked possesses certain definite characteristics. Should the reef take the form of scattered pebbles in a matrix similar in appearance to the surrounding barren rock, then, since the reef is not easily distinguishable from the waste, reef picking cannot be applied. Again, if the blast products from the stopes contain a fairly constant proportion of such self-evident waste as shale, and varying proportions of reef and quartzite, then it is clearly easier to separate the shale from the reef and quartzite than the reef from the shale and quartzite, or the reef and quartzite from the shale.

Another important factor is the friability of the reef. Certain reefs, notably those which are associated with "carbon", fragment far more readily than the waste rock which over- and underlies them, and the smaller blast products from stopes working such reefs invariably contain a high proportion of the available gold. It has, in fact, been proved that in the case of the more friable reefs, the gold and uranium contents of the stope blast products is in inverse ratio to the size of the products.

On account of the consistent pattern of the size-content relationship of friable reefs, it is a general rule that on mines working such reefs, irrespective of whether reef is to be picked or whether waste is to be eliminated from the larger material on surface, all ore broken in the stopes is screened into size categories, and the material of a size less than a certain predetermined figure, usually 2 in. or 1½ in., constitutes mill feed.

Mines which practice reef picking include the West Wits. Line producers *Doornfontein G.M.* and *West Driefontein G.M.*, and, in the Klerksdorp area, *Hartebeestfontein G.M.* The two first-named producers both work the Carbon Leader reef, a dark, friable body which normally occurs between 12 in. and 24 in. in width, and, as the name implies, carries carbon on its footwall contact. The average stoping widths on the two mines are 40.3 in. and 42.4 in. respectively. This reef is easily distinguishable from its surrounding quartzites, and conditions are therefore ideal for reef picking.

The Case of the Carbon Leader

In the case of the Carbon Leader reef, the relationship between the size of the stope blast products and their gold and uranium contents is so constant that both *Doornfontein* and *West Driefontein* are able to base their flow-sheets on the simple hypothesis that rocks less than ¾ in. in size are rich in gold and contain economic amounts of uranium, that rocks less than 1½ in. and more than ¾ in. in size are poor in uranium but contain economic amounts of gold, and that the remaining rock is largely barren. Material falling into the two former size categories is therefore treated respectively for gold alone and for gold and uranium while material over 1½ in. in size is passed over sorting belts and inspected for inclusions of reef.

Two neighbouring producers, *Blyvooruitzicht G.M.* and *Libanon G.M.*, do not, however, apply reef picking. At Blyvoors, which was the first mine to be established in this extension of the Witwatersrand, and in a sense pioneered the extraction and treatment of the Carbon Leader reef as it occurs in the area, the management of the mine decided to adopt waste sorting at the outset of operations, and results have always justified the continuation of the practice. Libanon, on the other hand, works not the Carbon Leader reef but the far less friable Ventersdorp Contact and Main reefs. Consequently the size-content relationship which encourages reef picking on Doornfontein and West Driefontein does not occur, and waste sorting has therefore been adopted on Libanon.

(*Continued overleaf*)

It is worth mentioning here that very few of the reefs worked on the Witwatersrand proper are appreciably more friable than their associated quartzites, and reef picking is not practised on any of the West, Central or East Rand mines. Indeed, the reverse is sometimes true: the main economic horizon on the East Rand, for instance, is underlain by shales, which break far more readily than the reef itself.

A mine in the Klerksdorp area which has adopted reef picking is *Hartebeestfontein G.M.* This producer works the Vaal reef—a dark, friable, carbon-bearing body, averaging 15 in. in width on this mine. The Vaal reef as it occurs here being easily distinguishable from its footwall and hanging-wall quartzites, it is ideal for picking; and a reef-picking plant has been in operation on this mine for several years.

In contrast to Hartebeestfontein is a neighbouring producer, *Stilfontein G.M.* Although the two properties are adjacent and both mine the same reef, the underground conditions prevailing at the latter mine make sorting in the stopes difficult, and waste is therefore sorted out in a surface plant. Underground conditions are now improving on this mine, and, in anticipation of the time when waste packing in the stopes will be practicable on a larger scale, a reef-picking plant is under construction.

Wider Application of Reef Sorting

Reef picking, then, only has an application on mines working reefs which possess to a definite degree the characteristics of width, relative appearance and friability described above. Results prove the advantages of the practice, and the effective upgrading of the mill feed is most marked on mines which are, in fact, able to apply reef-picking methods.

Such mines, however, constitute a minority; and waste sorting, which has been applied since the establishment of the South African gold mining industry, is a much more widely practised method of eliminating barren rock from the ore reaching the surface.

Its application does not depend upon the nature of the reef, but only requires a degree of dissimilarity in appearance between the auriferous and the barren rock. Mines which carry bands of shale or shaly quartzite in their stope working faces, for instance, find a ready application for surface waste sorting, since shale and shaly or coarse-grained quartzites are easily distinguishable from the reefs and the cleaner quartzites which normally contain them. The mines of the Orange Free State are a case in point. Here reef picking is rarely feasible, since the Basal reef is occasionally confusable with the dark pyritic pebble bands which are found in the quartzites surrounding the reef; and a subsidiary reef band, sometimes poorly developed but often containing economic amounts of gold and uranium, occurs in the immediate footwall of the Basal reef on some mines.

Several Free State producers, including *Welkom G.M.*, *President Steyn G.M.*, and *Freddies Consolidated Mines* have recently introduced surface waste sorting; and at least one other producer is at present constructing a surface waste sorting plant. *President Brand G.M.*, which formerly sorted a small tonnage of waste on surface, has abandoned the practice since it has decided to revise its stoping practice and to carry out all waste sorting underground. Welkom's sorting procedure, which is typical of the methods applied on the sorting mines of the Anglo American group in the Orange Free State, entails the removal by trained natives of obvious waste, which is mainly represented by shale, from the larger rocks of the mill feed as they are passed over the sorting belts. Waste discarded from the primary belts is passed along a second belt, where it is checked for inadvertent inclusions of reef.

One mine in the north of the goldfield, *Loraine G.M.*, which is forced to mine out a thick and persistent band of shale occurring not far above the Basal reef, employs two-phase stoping, underground waste packing and stope waste tramming when working this reef. Loraine also works a second reef, the "B" reef. This body, which is usually wider than the Basal reef, does not lend itself to the two-phase method of stoping; but, having a shaly quartzite footwall, does encourage a degree of waste sorting. During the year ended September, 1957, more than 20 per cent of the tonnage of ore (drawn from both reefs) sent to Loraine's mill was eliminated by surface sorting; while, viewing operations on Basal reef apart, two-phase stoping and waste sorting effected the elimination of up to 42 per cent of the waste produced in the Basal reef stopes.

Effects of Sorting

Sorting has a marked effect on a mine's mill grade, the cost per ton milled, and the cost per oz. of gold recovered. In this context waste sorting and reef picking may be regarded as one, since both practices have the effect of eliminating a proportion of the potential mill feed and of upgrading the actual mill feed, and since there is a reasonable parity between the costs involved in each case.

It will be noticed from the annual reports of mines which apply sorting to any extent that the mill grade tends to improve steadily as sorting is intensified, and that it readily overtakes the published ore reserve value. This seemingly anomalous behaviour, which apparently causes surprise tinged with disbelief among some shareholders, arises out of the fact that the mill grade is derived by dividing the number of pennyweights of gold recovered by the number of tons milled; and, as an increasing tonnage of waste is eliminated from the potential mill feed, the actual mill feed decreases. The amount of gold, however, does not decline correspondingly. One has, therefore, an increasing or constant recovery being divided by a progressively smaller divisor, the tonnage milled. The quotient, representing the mill grade, therefore increases accordingly.

The tendency of the mill grade to exceed the ore reserve value arises out of the fact that the latter figure takes into account the dilution of the reef extracted in the stopes by the waste, which is necessarily extracted with it. The ore reserve grade is a reflection of the overall value of the ore which is available for immediate extraction in a mine, and is arrived at by averaging out the reef value, in pennyweights per ton, obtained in frequent samplings over regularly spaced reef sections in ground which has been blocked out or is being stoped out, over the average stoping width of the mine. Almost without exception, however, a mine's stope faces contain varying widths of waste. As this waste is eliminated from the mill feed, the mill grade tends towards the value of the reef over its average channel width rather than over its stoping width.

It must be emphasized that any parity between the mill grade and the ore reserve value is usually purely coincidental, since the latter figure represents the result of the division of an average by an average. In the case of mines which are applying and intensifying sorting to any appreciable degree, a persistent similarity between the two figures may be an unfavourable reflection of the efficiency of the ore production or sorting practice.

Allied to the effect of sorting on a mine's mill grade is its effect on the trend of costs per oz. of gold recovered. Consider, for example, a mine with a reduction plant having a milling capacity of 75,000 tons a month, and a sorting plant equipped to eliminate 25 per cent of the mill feed. To keep the mill running at capacity the amount of rock broken each month on such a mine must be 100,000 tons. Assuming that no stope rock is discarded underground, and that the sorting plant is working at maximum efficiency, 75,000 tons of ore will be passed to the mill. This tonnage of sorted rock will, however, ideally yield 33⅓ per cent more gold than would an equal tonnage of unsorted stope rock. The cost of stoping the additional 25,000 tons is more than offset by the marketable value of the 33⅓ per cent extra yield.

The effect of sorting on the cost per ton of rock milled is also marked. This figure, as the tonnage of waste discarded from the potential mill feed increases, tends to rise proportionally. Here again one has an arithmetical dividend represented by the working expenditure, of which many of the constituent costs move independently of the tonnage of ore milled or remain more or less constant however much waste is eliminated, being operated on by a decreasing divisor, the tonnage milled.

Limitations of Reef Sorting

The extent to which surface sorting can be applied is strictly governed and limited, not only by such practical considerations as the ease with which the reef can be distinguished from the waste, but also by the law of diminishing returns. If sorting were to be carried to its limit—that is, if the management of a mine decided that the virtually total separation of reef and waste had to be effected before ore could be passed to the milling circuit—then it would be necessary to construct a vast and expensive sorting plant employing large numbers of trained sorters. Moreover, the situation would arise that either the mill would, for long periods, be running considerably below capacity, or else the mine's production department, in its efforts to extract in the stopes and block out in development enough ore to keep both the sorting and the reduction plants occupied, would involve the mine in greatly increased working expenditure.

The size of a sorting plant, and therefore the extent to which sorting can be applied, is thus limited. A compromise between the rate of production, the rate of sorting and the rate of milling has to be found; and each process has to be regulated until the economic optimum for the three complementary processes working together has been determined.

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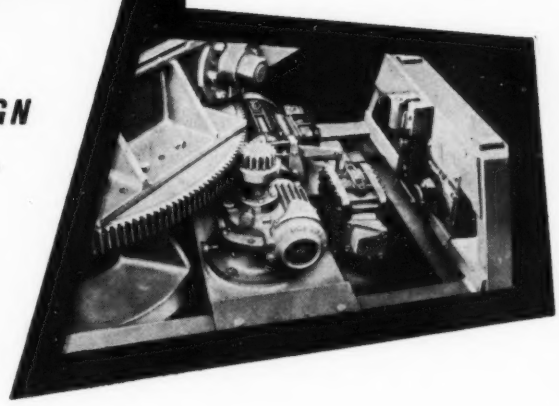

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